ABSTRACT

Paul J. Briney, THE EFFECTS OF IMPLEMENTING RESEARCH-BASED INTERVENTIONS WITHIN THE MTSS FRAMEWORK ON K-2 LITERACY (Under the direction of Dr. Travis Lewis). Department of Educational Leadership, May 2021.

Concerns continue to exist in public schools nationwide regarding students who are reading below grade level. The purpose of this mixed methods study was to focus on the components of the MTSS Framework as well as the creation, implementation, and monitoring of research-based, tiered interventions. This study evaluates a comprehensive process, known as the Multi-Tiered System of Support, to remediate students reading below grade level in grades K-2 at Creekside Elementary. Creekside Elementary School, a low-performing school as determined by the State of North Carolina, has received a State Report Card grade of a "D" for the 2015-2016, 2016-2017, and 2017-2018 school year. As part of this study, the scholarly practitioner employed a tiered system of interventions as recommended throughout the MTSS Framework, along with a uniformed process to collect student data. Throughout the study problem-solving meetings took place, student data was traced using progress monitoring, and interventions were implemented by all K-2 classroom teachers. The findings of this study show that students in the primary grades who are working below grade level have the capability to make academic gains if specific routines and expectations are put in place by school administrators and classroom teachers. These components consist of quality tier I instruction, a sound understanding of the MTSS framework, schoolwide schedules, collaboration and communication, and an effective data collection process.

THE EFFECTS OF IMPLEMENTING RESEARCH-BASED INTERVENTIONS WITHIN THE MTSS FRAMEWORK ON K-2 LITERACY

A Dissertation

Presented to

The Faculty of the Department of Educational Leadership

East Carolina University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education in Educational Leadership

by

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May, 2021

THE EFFECTS OF IMPLEMENTING RESEARCH-BASED INTERVENTIONS WITHIN THE MTSS FRAMEWORK ON K-2 LITERACY

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DEDICATION

This dissertation is dedicated to my wife Elizabeth and two daughters, Mary Carson and Grayson. Your love, motivation, support, and patience have made this not only possible but everything that I do in life possible. My mother and late father, Barbara and Norman, thank you for teaching me the importance of hard work, determination, and perseverance. Your love and sacrifices will never be overlooked.

ACKNOWLEDGEMENTS

As I pause and reflect on this journey, I think about the individuals who helped make this dream become a reality. Their love, support, and words of encouragement have helped me become a better person. It is because of them that I want to say thank you, thank you for believing in me.

First, to my dissertation chair, Dr. Travis Lewis, thank you for being there every step of the way. Your words of encouragement, patience, and guidance were truly genuine. You believed in me and provided me an abundance of guidance and support. You kept me on track and reminded me to "keep writing". I can never pay you back for all that you have done. I appreciate you more than you know.

Thank you to the members of my committee, Dr. Karen Jones, Dr. Heidi Puckett, and Dr. Seth Brown. Your guidance, feedback, and support helped me cross the finish line. Gwen Joyner, your feedback, edits, and answers to all my questions were crucial, thank you.

To my friends and colleagues with Pitt County Schools, thank you for your support and friendship. Dr. Ethan Lenker, thank you for your support, the leadership you offer, and the leadership opportunities which you have provided for me. Pitt County Schools Senior Staff and Pitt Counry Schools Curriculum Team, thank you for your inspiration, guidance, and support. You all are amazing team of leaders and educators.

To my doctoral classmates, I thank you for your companionship, encouragement, and feedback. Colleen Burt, Darryl Thomas, and Taylor Matkins, thank you for the jokes, laughs, and friendship. We began this journey together and ended this journey together.

From the bottom of my heart, I would like to say thank you to my staff at Creekside Elementary. You all are an amazing group of educators who inspire me every day. Thank you for

your commitment to our students, your commitment to excellence, and your commitment to a growth mindset. Remember, we learn together, we grow together. We succeed together, we fail together. I am forever grateful to be part of this team and community.

Special thanks to Yolanda Williams, my colleague and friend. Your words of encouragement, spiritual guidance, and laughs have helped me juggle many balls throughout these past three years. Thank you for your patience and pushing me to be better.

I cannot begin to express my appreciation to my family for their continuous support and patience throughout this entire process. To my mom, who reminds me the sun is still shining even on the cloudiest days. To my late dad, who I hope is smiling down and proud of this of this accomplishment. You taught me the meaning of hard work and the importance of providing for your family. Thank you to my three sisters Corrie, Brenda, and Kayce for your encouragement and checking-in. You all have a special place in my heart, and I am proud to be your brother. Garrett and Darryl, thank you for helping me unwind and for reminding me to set this aside and have fun! To my mother-in-law, Barbara, thank you for being there for my girls and never questioning my intentions. Your presence in the girl's life during my absence is something I can never repay you for.

Finally, to my wife, Elizabeth and daughters, Mary Carson and Grayson, again thank you for your support, patience, and all your hugs and kisses. Elizabeth, I know you spent many days and nights alone helping with homework, baths, and bedtime. I would not have been able to complete this without you. You are my rock. I love and appreciate you more than you will ever know. Mary Carson and Grayson, the hardest part of this journey was being away from the two of you. I am sorry if I let you down. I hope this dissertation serves as a testament to the two of

you that anything is possible with hard work, determination, and faith. I look forward to making up for lost time. I love you both to the moon and back.

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CHAPTER 1: INTRODUCTION

In order to successfully grow our students academically and socially, educators need to be able to teach the "whole" child. According to the United States Department of Education's strategic plan for the fiscal year 2011-2014, schools need to do a better job in ensuring not only that students graduate in a timely manner, but also that students are prepared for college and a career (U.S. Department of Education, 2012). According to Hernandez (2011), a student who cannot read on grade level by 3rd grade is four times less likely to graduate high school by age 19 than a child who does read proficiently by that time. Add poverty to the mix, and a student is 13 times less likely to graduate on time than his or her proficient, wealthier peer (Hernandez, 2011). As such, it is important that educators understand student needs and are able to differentiate instruction to meet the needs of their students. Those needs should be met on a daily basis and in all subjects with the implementation of research-based interventions and strategies (Tomlinson, 1999). Multi-Tiered System of Support, or MTSS, is a framework that many schools throughout the United States have adopted to help provide targeted support to struggling students. MTSS supports not only academic growth and achievement, but also behavioral, social and emotional needs (Rosen, 2018).

While MTSS is a simply conceptual framework, the implementation of this model has turned into an intricate system of paperwork and processes, leading many to question the effectiveness of MTSS (Bailey, 2018). Many school districts, administrators, and teachers throughout Eastern North Carolina seem confused and overwhelmed on how to effectively implement the plethora of research-based strategies and are waiving the white flag due to lack of quantitative results. Schools like Creekside Elementary School, the focus of this study, are struggling to implement the strategies to fidelity due to lack of understanding, lack of resources,

and/or lack of time. “Without fidelity to the process of implementation, it is impossible to determine the cause of poor performance, which jeopardizes the effectiveness of the RTI/MTSS process” (Mellard & Johnson, 2008, p. 1).

Background of the Problem

The Individuals with Disabilities Education Act (IDEA), established in 1975 and formerly known as the Education for All Handicapped Children Act (EHA), is designed to ensure that students with disabilities are provided a Free and Appropriate Education (FAPE) while offering those students the same opportunities as their peers without disabilities (Rhodes et al., 2007).

> In 2017–18, the number of students ages 3–21 who received special education services under the Individuals with Disabilities Education Act (IDEA) was 7.0 million, or 14% of all public school students. Among students receiving special education services, 34% had specific learning disabilities (National Center for Education Statistics, U.S. Department of Education, 2019b, para. 3).

According to the National Center for Education Statistics (National Center for Education Statistics, U.S. Department of Education, 2019b), “approximately 413,000 students ages 14–21 served under IDEA exited school in 2016–17: about two-thirds (71%) graduated with a regular high school diploma, 17% dropped out, 10% received an alternative certificate, 1% reached the maximum age to receive special education services, and less than one-half of 1% died”. As the demands of public education continue to increase and the funding continues to dwindle, students are at risk for falling between the cracks.

Over the years, there have been several laws signed by Congress and presidents which focused on the education of K-12 students nationwide. Each bill focused on student growth and

success and represented a momentous step towards academic commitment and excellence. Like any bill put in place by the U.S. Government, there are guidelines, stipulations, and expectations. The latest bill, Every Student Succeeds Act, also known as ESSA, was signed by President Barack Obama on December 10, 2015. ESSA, replacing No Child Left Behind, allows states to determine their goals, big or small, those goals focusing on testing proficiency, English-language proficiency, and graduation rates. Schools looking for ways to raise student proficiency and graduation rates have come to the realization that actions need to be put in place to help those students working below grade level. MTSS, a three-tiered system of support, is being adopted in the state of NC, to help close the achievement gap for students in grades K-12 (Klein, 2015). Although countless hours, resources, and adoption of state and local programs have been implemented with hopes of closing the achievement gap, a gap nonetheless remains in teaching and learning (National Center for Education Statistics, U.S. Department of Education, 2019a).

The vision of North Carolina's Department of Public Education states "every NC Pre K-12 public education system implements and sustains all components of a Multi-Tiered System of Support to ensure college and career readiness for all students" (North Carolina Department of Public Instruction, 2019a, para. 2). Research has shown that teachers who collect and maintain performance data on which they base decisions about the teaching and learning process and the effectiveness of their instruction are more effective teachers than those who do not and merely rely on 'clinical judgment' only (Konen, 2018).

Since the 2013-2014 school year, the North Carolina Department of Public Instruction, under the directive of the N.C. General Assembly, has been providing school letter grades for each public school in North Carolina. These letter grades replace the school designations that have been used in the past with the ABC accountability model. The School Performance Grades

are calculated based on 80% proficiency on state tests and 20% is based on student growth (North Carolina Department of Public Instruction, 2019d). Creekside Elementary School, a low-performing school as determined by the state of North Carolina, has received a State Report Card grade of a "D" for the 2015-2016, 2016-2017, and 2017-2018 school year. Teachers and administrators at Creekside are aware of their low-performing status and understand the need to close the achievement gap in order to raise their School Report Cards letter grade. Creekside, home to approximately 650 students, data showed gaps among subgroups more so with African American students as well as Student's with Disabilities. Overall, White students were 65.4% proficient in Grades 3-5 on the North Carolina End-of-Grade ELA and Math exams whereas Black students were only 29.3% proficient. Students with Disabilities were only 20% proficient in the same tested areas. In 2017-2018, 33% of students or 6% of the K-2 population at Creekside Elementary were retained due to working below grade level.

Problem Statement

It is of utmost importance that educators understand students' needs and are able to differentiate instruction to meet the needs of their students. Those needs should be met on a daily basis and in all subjects with the implementation of research-based interventions and strategies (Gorski, n.d). As educators scramble to find solutions and resources to meet the needs of their students, school districts are adopting the Multi-Tiered System of Support, or MTSS, framework to help better screen their students for potential learning disabilities. MTSS, is designed to provide targeted supports using research-based interventions, focuses on the whole child, such as academics, behavior, social and emotional needs, and absenteeism. Multi-Tiered System of Support is a framework that many schools throughout the United States have adopted to help provide targeted support to struggling students (Rosen, 2018).

Effective implementation of MTSS requires schools to create a progression of evidence-based practices aimed at being responsive to the differing levels of needs students have in relation to their academic achievement and social-emotional behavior (Horner et al., 2010). Effective implementation of MTSS is associated with a greater likelihood that targeted instructional and interventions strategies will lead to increased student learning (Florida Department of Education, 2019). As schools begin to adopt the MTSS framework and develop teams to help effectively implement the framework's three tiers to fidelity, administration must be cognizant of the data being collected and the matter in which it is collected. Leadership teams within the buildings must be fully aware and trained on the interventions being implemented and the degree in which they are being implemented. Schools that have implemented specific school wide MTSS approaches have demonstrated significantly higher desirable outcomes (e.g., social and emotional skills, behavior, and academic performance) than schools that did not (Durlak et al., 2011). Schools that effectively implement school wide approaches to behavior also have demonstrated improvements in academic outcomes (Bradshaw et al., 2010; Bradshaw & Pas, 2011; Childs et al., 2010) and behavioral performance.

Creekside Elementary, designated a low-performing school by the state of North Carolina since 2016 based of End-of-Grade Exam data, continued to grow students academically but has failed to raise student proficiency percentages. In order to grow students academically, as well as raise proficiency numbers, the staff at Creekside Elementary has adopted the MTSS framework and has implemented research-based strategies to fidelity in order to help students in K-2 make gains in literacy. The scholarly practitioner of this study has collected student literacy data at the beginning of the year and middle of the year using the Istation platform to better understand

students' strengths, weaknesses, gains, and shortfalls. The scholarly practitioner has also collected individualized student data as students either moved through or exit the Tier process.

Purpose of the Study

Research shows children who are exposed to reading at an early age and develop early literacy skills are more likely to become fluent readers compared to those students who are not exposed to reading (Shrier, 2013). The purpose of this study was to analyze research-based strategies within the Multi-Tiered System of Support, or MTSS, framework to determine their effects on K-2 literacy.

Such an analysis of MTSS strategies was needed to help determine the benefits of the framework at hand. The results of this study will allow Creekside Elementary staff to implement the three-tier process and provide the school's stakeholders a better understanding regarding the fidelity of the framework. MTSS, adopted by the state of North Carolina and the Pitt County Schools district to which Creekside Elementary is affiliated, is defined as a multi-tiered framework which promotes school improvement through engaging, research-based academic and behavioral practices (North Carolina Department of Public Instruction, 2019a). North Carolina's MTSS employs a systems approach using data-driven problem-solving to maximize growth for all. The goal is to improve student achievement using research-based interventions matched to the level and instructional need of the student (Robins & Antrim, 2013). According to Mellard and Johnson (2008), "consistent and detailed measures of fidelity of implementation support the efficacy of an RTI/MTSS model" (p. 117). Failure to implement interventions with consistency and as designed has been shown to be related to students' academic outcomes (DeFazio et al., 2011; Greenwood et al., 1992; Grow et al., 2009). Creekside Elementary, a low-performing school in Pitt County, North Carolina was required to adopt and follow the MTSS framework

with hopes of raising student achievement scores. As students at Creekside continued to perform below grade level, teachers, administrators, and district officials hoped to see academic gains by utilizing research-based strategies in small group settings.

Research Questions

The Multi-Tiered System of Support, a framework being adopted by school districts across the nation, is being used to provide research-based targeted support to struggling students. There were two central research questions the scholarly practitioner attempted to answer in this study.

1. What are the effects of implementing research-based interventions within the MTSS framework on student literacy in grades K-2?
2. How do teachers' perceptions of the MTSS framework change throughout the implementation of research-based interventions on student literacy in grades K-2?

The scholarly practitioner used an action research study design to collect and analyze data using the Amplify mClass platform as well as the Istation platform. mClass, a universal screener used in Pitt County Schools since 2013, measured the development of reading skills using two main assessments: Dynamic Indicators of Basic Early Literacy Skills, or DIBELS, and the Text Reading Comprehension, or TRC, assessments (Wireless Generation, n.d.). Istation, an online platform, which was adopted by NC Public Schools at the start of the 2019-2020 school year, used an instrument known as Istation's Indicators of Progress for Early Reading also known as ISIP. ISIP, a game-like assessment, is used to determine a student's reading level and adjusts in length and complexity in real-time based on the student's performance (Mathes et al., 2016). The scholarly practitioner also analyzed information gained through surveys, interviews, and questionnaires given to K-2 teachers to obtain a better understanding of teachers'

perceptions and beliefs of the MTSS framework and accompanying research-based interventions for literacy.

Theoretical Foundation

"Implementation science has progressed towards increased use of theoretical approaches to provide better understanding and explanation of how and why implementation succeeds or fails" (Nilsen, 2015, p. 1). The implementation science framework was chosen for this study because, in order for research-based interventions to be successful, they must be implemented to fidelity. In order to implement to fidelity, one must possess the background knowledge regarding effective research-based strategies and how to effectively implement those strategies. According to the North Carolina Department of Public Instruction (2019a), MTSS employs a systems approach using data-driven problem-solving to maximize growth for all. The growth mentioned focuses not only on student academic gains but student social-emotional and behavior gains. When implementing an intervention in classrooms, it is important to implement it as intended, or with fidelity, to increase the likelihood of consistently obtaining the results you are looking to achieve (Harn et al., 2013). Although some degree of teacher adaptation is anticipated, interventions implemented with higher fidelity tend to be more effective (Quinn & Kim, 2017). The relationship might be described as: "Effective Interventions x Effective Implementation = Improved Outcomes" (Fixsen et al., 2013).

The implementation science model arose in health care as early as 1940 (McKay, 2017). Educators are recognizing the usefulness of implementation science because it provides a framework for thinking about organizational change and bridges the knowing-doing gap that is prevalent in education (Eagle et al., 2015). According to McKay (2017), personal beliefs, behaviors, and values of people involved in implementing reforms can affect the quality of

implementation and, therefore, the outcomes. With that being said, no single group should be accountable for putting interventions in place. “Research has found that when teachers implement a program, they don’t necessarily change instructional strategies to fit the change. Therefore, external facilitators are needed during implementation to train teachers on the best instructional practices to achieve quality and effective outcomes” (McKay, 2017).

The Stages of Implementation are Exploration, Installation, Initial Implementation, and Full Implementation (Fixsen et al., 2013) (see Figure 1). These four stages are vital and must be understood by all stakeholders for successful implementation.

Key Terms

Accommodation - “changes to instruction or assessment administrations that are designed to increase students’ access to materials or enable them to demonstrate what they know by mitigating the impact of their disability. They also are designed to provide equity, not an advantage, for children with disabilities. When used appropriately, they sometimes reduce or even eliminate the effects of a child’s disability, but they should not reduce or lower the standards or expectations for content” (Center on Response to Intervention, 2013, para. 1).

Aim Line - “represents the target rate of student progress over time. The aim line is constructed by connecting the data point representing the student’s initial performance level and the data point corresponding to the student’s year-end goal” (Center on Response to Intervention, 2013, para. 3).

Alphabetic Decoding - alphabetic decoding measures the ability to blend letters into nonsense words in which letters represent their most common sounds. Nonsense words are used because students differ in their sight word recognition skills (Reading Rockets. Reading Basics, 2018).

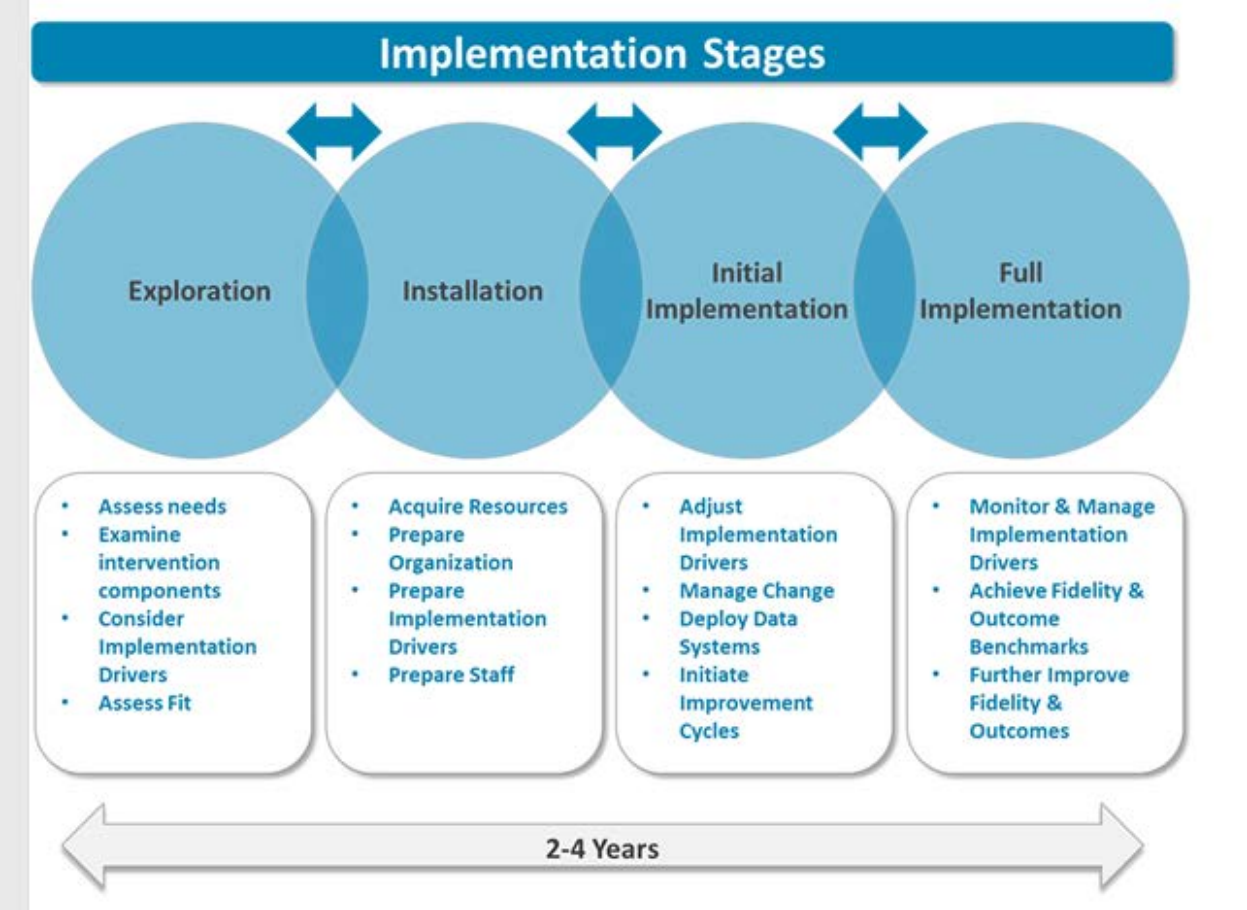

Figure 1. Implementation stages (UNC's Frank P. Graham's Child Development Institute).

Alphabetic Knowledge and Skills – "alphabetic knowledge and skills include knowing the symbols or combinations of symbols used to represent specific phonemes (i.e., letter-knowledge) and using them to map print onto speech. The application of alphabetic knowledge and skills is exceedingly important because these skills facilitate word recognition" (Mathes et al., 2016).

At risk - refers to students who fall short of mastering grade-level material required for their grade and need special intervention to reduce the possibility of serious failure (The Glossary of Education Reform, 2013).

Baseline Data - data that is collected before an intervention or program change begins (Center on Response to Intervention, 2013).

BOY (Beginning of Year) - time of year the mClass: Reading 3D assessment is administered (Amplify Education, Inc., 2013). BOY assessments usually occur in September. BOY assessments are part of the mClass: Reading 3D benchmark assessments.

Common Core Standards (CCS) - a set of academic standards created to ensure all students in grades K-12 graduate from high school with skills needed to succeed in college, the workforce, and everyday life. CCS, developed in English Language Arts and Mathematics, are learning targets that each student should be proficient in at the end of each grade. Forty-one states, the District of Columbia, as well as four territories, have currently implemented the CCS (Common Core State Standards, 2019).

Core Curriculum - "materials and instructional standards required of all students in the general education setting. Core curricula are often instituted at the elementary and secondary levels by local school boards, departments of education, or other administrative agencies charged with overseeing education" (Common Core State Standards, 2019).

Data-Based Decision Making - "ongoing process of analyzing and evaluating student data to inform educational decisions, including but not limited to approaches to instruction, intervention, allocation of resources, development of policy, movement within a multi-level system, and disability identification" (Center on Response to Intervention, 2013, para. 17).

DIBELS (DAZE) - ability to construct meaning from text using word recognition skills to measure the reasoning processes that constitute comprehension (Amplify Education, Inc., 2013).

Differentiated Instruction - "educator's strategies for purposely adjusting curriculum, teaching environments, and instructional practices to align instruction with the goal of meeting the needs of individual students. Four elements of the curriculum may be differentiated: content, process, products, and learning environment" (Common Core State Standards, 2019, p. 11).

Dynamic Oral Reading Fluency (DORF) - ability to read connected text fluently and with accuracy in order to retell a passage (Amplify Education, Inc., 2013).

EOY (End of Year) - time of year mClass: Reading 3D assessment is administered (Amplify Education, Inc., 2013). EOY assessments usually occur in May.

Fidelity of Implementation - "refers to the accurate and consistent delivery of instruction or assessment in the manner in which it was designed or prescribed according to research findings and/or developers' specifications. Five common aspects of fidelity are adherence, exposure, program differentiation, student responsiveness, and quality of delivery" (Common Core State Standards, 2019, p. 11).

First Sound Fluency (FSF) - ability to isolate and pronounce the first sound in spoken words (Amplify Education, Inc., 2013).

Formative Assessment - "form of evaluation used to plan instruction in a recursive way. With formative assessment, student progress is regularly assessed to provide ongoing feedback

to the student and the teacher concerning learning successes and failures. With formative assessment, teachers diagnose skill, ability, and knowledge gaps; measure progress; and evaluate instruction. Formative assessments can be formal or informal and are not necessarily used for grading purposes" (Center on Response to Intervention, 2013, para. 31).

Individualized Education Program (IEP) - "a legal document that describes the plan for delivering specially designed instruction, related services, and accommodations to meet the educational needs of a student with a disability" (Center on Response to Intervention, 2013, para. 40).

Intervention - targeted instruction in a specific skill or set of skills to students who are at risk for poor learning outcome (Fuchs & Fuchs, 2006).

Istation's Indicators of Progress – "provides growth data in the five critical domains of early reading: phonemic awareness, alphabetic knowledge and skills, fluency, vocabulary, and comprehension. The purpose of Istation's Indicators of Progress (ISIP) are to (a) identify children at risk for reading difficulties, (b) provide automatic continuous progress monitoring of skills that are predictors of later reading success, and (c) provide immediate and automatic linkage of assessment data to student learning needs, which facilitates differentiated instruction" (Mathes et al., 2016, p. 4).

Istation Reading - a computer-based reading program that maximizes students' reading fluency, comprehension and retention, and academic success. A research-based 7 reading program that is used for assessment and intervention with pre-K through high school students. Istation specializes in response to intervention, using products that focus around a computer adaptive testing system, which is called the Istation Indicators of Progress (Mathes, 2010).

Letter Knowledge - letter knowledge represents the most basic level of phonics knowledge (i.e. whether students know the names and sounds represented by the letters of the alphabet). Letter knowledge is comprised of two types of items: recognition of letter names and recognition of letter-sound correspondences (Mathes et al., 2016).

Letter Naming Fluency (LNF) - ability to recognize and name capital and lowercase letters of the alphabet (Amplify Education, Inc., 2013).

Letter Sound - letter sound is a measure of alphabetic principle that assesses how many letter sounds a student can correctly identify in a minute (Amplify Education, Inc., 2013).

MOY (Middle of Year) - time of year mClass: Reading 3D assessment is administered (Amplify Education, Inc., 2013). MOY assessments usually occur in January.

Multi-Tiered System of Support - Multi-Tiered System of Support (MTSS) is a multi-tiered framework that encourages school improvement through engaging, research-based academics and behavioral practices. MTSS within the state of NC promotes a systems approach using data-driven problem solving to meet the needs of all students (North Carolina Department of Public Instruction, 2019a).

Nonsense Word Fluency (NWF) - ability to identify complete letter sounds and blend letter sounds in whole words read (Amplify Education, Inc., 2013).

Oral Reading Fluency (ORF) – an assessment that provides opportunities for students to demonstrate their reading fluency through the oral reading of text and the collection of a running record. Students are recorded while reading as the teacher has the option to sit with the student in order to observe, review, and manually score the passages once the student is finished (Mathes et al., 2016).

Phonemic Awareness - phonemic awareness refers to the understanding that spoken words are comprised of individual sounds called phonemes. This awareness is important because it underpins how sound-symbols in printed words map onto spoken words (Mathes et al., 2016).

Phonemic Blending - phonemic blending assesses a student's ability to blend up to six phonemes into a word (Mathes et al., 2016).

Phonemic Segmentation Fluency (PSF) - ability to separate words into their sequence of individual sounds (Amplify Education, Inc., 2013).

Print Concepts (PC) - measures the knowledge of basic print concepts (Amplify Education, Inc., 2013).

Problem Solving Team (PST) - are intervention driven/progress monitoring teams at each school which assists students, families, and teachers in seeking positive solutions for all students. The primary goal of the PST is to support teachers and parents by generating effective research-based academic and behavioral strategies for individual targeted students. In addition, Problem Solving Teams can use schoolwide and class-wide data to monitor the success and difficulties of groups of students and can offer academic and behavioral interventions to be applied to class or school-wide issues (Center on Response to Intervention, 2013).

Professional Learning Community - an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve. Professional learning communities operate under the assumption that the key to improved learning for students is continuous job-embedded learning for educators (DuFour et al., 2006).

Progress Monitoring - used to assess students' academic performance, to quantify a student rate of improvement or responsiveness to instruction, and to evaluate the effectiveness of

instruction. Progress monitoring can be implemented with individual students or an entire class. Attention should focus on fidelity of implementation and selection of evidence-based tools, with consideration for cultural and linguistic responsiveness and recognition of student strengths (Center on Response to Intervention, 2013).

Reading Behaviors (RB) - measures the knowledge of basic support behaviors for literacy development (Amplify Education, Inc., 2013).

Response to Intervention (RTI) – like MTSS, RTI focuses on early identification and support of those students who have academic and behavioral needs. RTI begins with high-quality instruction and universal screening of all children in the general education classroom (Gorski, n.d.).

Tier I - instruction that is catered to the whole class. During this tier all students are taught using research-based methods. During tier one student may receive instruction in small group settings based on their areas of strengths and needs (Rosen, 2018).

Tier 2 - struggling students receive more targeted, intentional support that is provided in small groups where students within that group have the same deficiencies (Rosen, 2018).

Tier 3 - intensive, individualized supports for those students who are not making gains in tier 3 (Rosen, 2018).

Text Fluency – beyond phonological and alphabetic knowledge, children must be able to read connected text with relative ease if the meaning of that text is to be accessed and the development of mature comprehension strategies are to prosper (Torgesen et al., 2002).

Text Reading Comprehension (TRC) - ability to accurately and fluently read connected text in order to comprehend oral questions and answer written response questions (Amplify Education, Inc., 2013).

Universal Screening - the first step within a process that is used to identify students who are at risk for a learning disability. These screenings are geared towards those students who struggle to make academic gains even when provided research-based interventions (Jenkins et al., 2007).

Word Recognition (WR) - measures the ability to accumulate a reading vocabulary of high-frequency words (Amplify Education, Inc., 2013).

Assumptions

With regard to this study, it was assumed that the Multi-Tiered System of Support is an effective framework that focuses on accelerated learning of academic, functional, behavioral, and social-emotional skills for students who are falling behind in their current educational setting. It was also assumed that all teachers at Creekside Elementary are using research-based strategies and following the multiple tiers of instruction to the best of their ability. The theory behind MTSS states that the framework, an evidenced-based process, utilizes data-based decision making. Once data is collected and lessons are designed based off the data, then instruction, assessments, and interventions are delivered to students based on their needs and intensified, as appropriate.

As for the students participating in this study, the scholarly practitioner has assumed that the interventions being implemented are research-based and utilized with fidelity. In order for schools to ensure fidelity, there are three components that schools must monitor (Positive Behavioral Interventions & Supports OSEP Technical Assistance Center, 2016):

1. Fidelity of implementing the critical components of a multi-tiered system of supports (MTSS);
2. Fidelity of using the problem-solving process across all three tiers; and

3. Fidelity of implementing evidence-based instruction and interventions matched to specific need(s).

To ensure fidelity, the scholarly practitioner held weekly Problem Solving Team meetings. Data representing the research-based interventions being used, how often they are used, and the effectiveness of those strategies was collected.

Scope and Delimitations

The goal of this study was to ensure that the research-based interventions being implemented at Creekside Elementary were effective and that these interventions helped grow those students who were working below grade level. This area of focus was determined based on the number of students at Creekside Elementary in grades K-2 who were reading below grade level and unable to make sufficient academic gains. Creekside's mClass data, more specifically Text Reading Comprehension data from the 2017-2018 school year showed 38% of kindergarten students performed far below grade level while 14% of students were performing below proficiency. First grade TRC data during the same year showed 21% of students performed far below grade level, while 12% of students were performing below proficiency, 2nd grade TRC data showed 17% students performed far below grade level, while 11% of students were performing below proficiency.

The scholarly practitioner in this study chose to limit the participants to K-2 students at Creekside Elementary School while choosing to focus on reading rather than math due to the national trend of students who are struggling to read on grade level. According to the National Assessment of Education Progress, 65% of all U.S. fourth graders scored below proficient on the NAEP reading exam in 2013, while 64% of eighth graders were reading below grade level (National Center for Education Statistics, U.S. Department of Education, 2019a). As Principal of

Creekside Elementary School, or CSE, the scholarly practitioner had direct access to the teachers and students who were participating in this study. The scholarly practitioner also had a vested interest in the outcome of this study with hopes that the results in this study would be used to promote K-2 literacy gains throughout the entire district of Pitt County Schools and beyond.

Limitations

It was the scholarly practitioner's goal to understand the implementation science of the MTSS framework, how it related to behavioral and academic growth and success of adolescent children. Although the research and data collected was carefully prepared, the scholarly practitioner was aware that there would be some limitations that would have to be taken into consideration.

First, successful implementation of the MTSS framework required the collaboration of several teams. These teams consisted of leadership, grade-level, and problem-solving teams. The teams must have worked together to make data-driven decisions and determine which students needed research-based interventions. The lack of data, or inability to effectively break down the data, could lead to inappropriate decision making.

Second, Pitt County Schools had no formal professional development on the MTSS framework. Lack of clarity amongst the school level teams, as well as staff turnover, could hinder a team's ability to successfully implement the framework. For example, at the time of this study no universal screening tools were provided to schools within Pitt County and there was a plethora of paperwork that had to be completed for every child going through the tiers of MTSS. These factors led to teachers feeling overwhelmed and led many to believe that they were not qualified to carry out the tasks associated with MTSS implementation.

Third, lack of time as well as fiscal resources could have impacted the overall findings of this study. MTSS is a complex process that involved teams collecting data, breaking down data, and analyzing that data. Once the data was analyzed, those teams had to incorporate intensive tiers of support and monitor the support to determine if the interventions were working or if changes needed to be made. Lastly, the findings of this study could not be generalized beyond the population at Creekside Elementary School.

Fourth, the scholarly practitioner was the current Principal at the school where the research was being conducted. Principals in the State of North Carolina evaluate teachers in their building, therefore staff members participating in the study may have felt compelled to respond to focus group questions which favored a response the scholarly practitioner was looking for.

Last, on June 7, 2019 school districts across North Carolina received correspondence from the NC Superintendent of Public Instruction Mark Johnson, regarding the use and implementation of a new K-3 diagnostic tool, Istation. Johnson controversially handpicked the computer-based Istation program for a three-year, $8.3 million contract to test K-3 students over the recommended Amplify mClass platform (Hui, 2019). State records requested by educators throughout the state of North Carolina showed "Johnson overrode the recommendations from an evaluation committee, which he had formed, that said the state should continue to use the mClass" (Hui, 2019, para. 10).

Baseline data collected for this research project originated from mClass, therefore the scholarly practitioner used two different diagnostic platforms to collect and analyze the data. mClass baseline data collected during the 2017-2018 school year as part of the yearly data collection was used to compare and contrast the academic gains or lack of academic gains of those students who were working below grade level. Data collected using the new Istation

platform, more specifically the ISIB, replaced mClass data collection beginning in September 2020.

Significance of Study

For the past several years, the state of North Carolina was slowly introducing the Multi-Tiered System of Support framework. Like many states throughout the United States, North Carolina understood that a systematic approach with emphasis on research-based, data driven interventions needed to be established in order to maximize growth for all.

> RTI's underlying premise is that schools should not delay providing help for our struggling students until they fall far enough behind to qualify for special education, but instead should provide timely, targeted, systematic interventions to all students who demonstrate the need" (Buffum et al., 2012, p. 8).

The research stated that creating and sustaining system-level changes in organizations can be a problematic process. Successful execution of MTSS requires systemic planning because it relies on research-based strategies, data-driven decision-making, implementation to fidelity, and staff collaboration and cooperation (Eagle et al., 2015).

District leaders as well as school leaders had the daunting task of working with all stakeholders to ensure the framework as a whole is being implemented to fidelity. Supporters of MTSS have argued that school and district leaders must engage educators in ongoing and effective professional learning practices for sustainable implementation to occur. The literature specifies that effective professional learning requires leadership, ongoing and intentional collaboration, allocation of appropriate resources, systematic implementation, research-based learning strategies to deliver content and the continuous use of data to determine the next steps (Castillo et al., 2018).

The significance of this study was that it will provide an accurate representation of the effectiveness of research-based interventions within the MTSS framework in regard to student growth and achievement. The scholarly practitioner closely monitored K-2 students who were going through the intervention process to determine the effectiveness of the interventions being implemented and the rate at which these students were growing.

This study provided district and school leaders with advantageous information pertaining to teacher perspectives of the MTSS framework and recommendations for the implementation process. Effectively implementing MTSS was going to require district and school leaders to create an environment of trust, understanding, and support in terms of fiscal support and professional development. The scholarly practitioner anticipated school leaders would be able to use the results from teacher questionnaires and surveys to better understand the techniques, expertise, and strategies needed to implement and sustain an effective MTSS framework with research-based interventions.

Summary

Districts and schools across the United States have looked for ways to meet the needs of all student learners with hopes of closing the achievement gap. As in the past, many initiatives and strategies have been used however students continued to fall between the cracks and work below grade level. The Multi-Tiered System of Support was another inititative many educational institutions were adopting with hopes to meet the needs of the whole child. Using research-based interventions within the MTSS framework, this study attempted to address reading deficiencies in students in grades K-2 at Creekside Elementary and examined the effects of research-based interventions within the MTSS framework on K-2 literacy. The following chapter contains an in-depth review of the current literature on No Child Left Behind, Every Student Succeeds Act, and

Individuals with Disability Education Act, the breakdown of the MTSS framework, as well as the computer-based assessment programs mClass and Istation.

CHAPTER 2: REVIEW OF LITERATURE

Multi-Tiered System of Support (MTSS) is a framework that promotes student growth through using research-based academic and behavior interventions. The framework of MTSS requires educators to look at and address students academic and social needs through problem-solving and decision making. The purpose of this study was to thoroughly examine and evaluate the implementation of research-based strategies within the MTSS framework in grades K-2 at Creekside Elementary School. Based on the literature reviewed pertaining to Response to Intervention (RTI) and MTSS, it was important to highlight the No Child Left Behind Act (NCLB) as well as Every Student Succeeds Act (ESSA). These education laws both focused on public education, student growth, and accountability. This literature review also provided relevant background information on the components of the MTSS framework as well as the barriers school systems and educators faced in regard to the mentioned framework. The literature that follows is a snapshot of the MTSS/RTI frameworks, practices, and implementation.

No Child Left Behind

The United States Department of Education, signed into law by President Jimmy Carter, began operating on May 4, 1980 (Hayes & Urbanski, 2008). Its mission was to promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access. The Department carried out its mission in two major ways. First, the Secretary and the Department played a leadership role in the national dialogue over how to improve the results of our education system for all students. This involved such activities as raising national and community awareness of the education challenges confronting the Nation, disseminating the latest discoveries on what works in teaching and learning, and helping communities work out solutions to difficult educational issues. Second, the Department pursued

its twin goals of access and excellence through the administration of programs that covered every area of education which ranged from preschool education through postdoctoral research.

The No Child Left Behind law—the 2002 update of the Elementary and Secondary Education Act—effectively scaled up the federal role in holding schools accountable for student outcomes. The NCLB law-—which grew out of concern that the American education system was no longer internationally competitive—significantly increased the federal role in holding schools responsible for the academic progress of all students (Klein, 2015). By holding school districts accountable for student performance and by providing expanded educational choices for students in failing schools, the proponents of NCLB hoped to improve overall educational quality (Krieg, 2008). Although states were not required to comply with NCLB requirements, those who did not were at risk of losing federal Title I money if they chose to design their own accountability framework.

Under the NCLB law, criteria were in place that required states to test their students in reading and math annually in grades 3 through 8 and once in grades 10-12 (Lee, 2019b). Once testing was completed, parents had the right to their student's test scores, while states were held accountable for publicly reporting test results. States, districts, and individual schools were responsible for sharing "subgroup" scores, including but not limited to, English-Language Learners, students with disabilities, racial minorities, and students that came from economically disadvantaged families (Lee, 2019c).

Testing, a form of accountability for students and teachers, was under the watchful eye of the federal government, and was a tool to track student success (Hayes & Urbanski, 2008). States and districts whose schools did not meet adequate yearly progress, a measurement defined by a State that describes the amount of yearly improvement each Title I school and district is expected

to make in order to enable low-achieving children to meet high performance levels expected of all children, had sanctions imposed which again could result in losing millions of dollars in federally funded monies, changes in school leadership, and/or closure of schools (Klien, 2015).

Every Student Succeeds Act

In December 2015, the Every Student Succeeds Act was signed into law, reauthorizing the Elementary and Secondary Education Act replacing the No Child Left Behind Act. ESEA, a federal law that provided funding for students in grades K-12, was proof that the nation was committed to providing equal educational opportunities for every child in the United States (Young et al., 2017). Like NCLB, the Every Student Succeeds Act, was designed to hold states and school districts accountable and to ensure all public schools were providing their students with a quality education.

Under ESSA, states must have tested students in reading and math once a year in grades 3 through 8, as well as once in high school. They must also have tested kids in science once in grade school, middle school, and high school (Lee, 2019a). With that being said, the Every Student Succeeds Act focused on more than just test scores when determining a school's success. For example, the four required academic factors included reading and math scores, English-language proficiency test scores, high school graduation rates, and a state chosen academic measure for grade schools and middle schools. States and school districts also had to adopt challenging academic standards, such as the Common Core State Standards; however, the federal government was unable to dictate which standards a state must follow (Team, 2018). Unlike, NCLB there were no federal penalties for struggling schools, however underperforming schools were prone to get more funding and had to develop a plan for improvement (Team, 2018).

In summary, although the NCLB era officially came to a close in December 2015, the Every Student Succeeds Act, NCLB's replacement, continued to include consequences for schools based on standardized test scores. With the development and implementation of ESSA, states had the option and greater flexibility in measuring a school's success other than the four academic indicators that were defined with NCLB (Whitney & Candelaria, 2017).

Individuals with Disabilities Education Act (IDEA)

Formerly known as the Education for All Handicapped Children Act, the EHA was first passed in 1975. EHA mandated that all public schools must evaluate handicapped students and work with parents to create an educational pathway to ensure handicapped students received educational services similar to their non-disabled peers (Moody, 2012). In 1990, President George H. W. Bush signed the Individuals with Disabilities Education Act replacing EHA in order to place more focus on the individual, as opposed to a condition that individual may have. IDEA serves two primary purposes: (1) IDEA provides free and appropriate public education (FAPE) to all children ranging from ages 3 through 21 years of age and; (2) to allow parents and guardians to participate and have a say in their child's education (Lee, 2019c). In 2014, George W. Bush signed into law a reauthorized IDEA which focused on changes to IEPs, changes in due process, and changes to student discipline (Weiss & Mettrick, 2010).

Reauthorization of IDEA 2004

The Individuals with Disabilities Education Act, reauthorized as the Individuals with Disabilities Education Improvement Act of 2004, was signed by President George W. Bush on December 3, 2004. This law, which mandated equity, accountability and excellence in education for children with disabilities, went into effect on July 1, 2005 (Smith, 2005). The

emphasis of the Individuals with Disabilities Education Improvement Act of 2004 was the individualized education program document, also known as the IEP (Gartin & Murdick, 2005).

> With the reauthorization of IDEA, several significant changes were made. The changes included requirements for highly qualified special education teachers; a track that resulted in full funding; changes in the composition of Individualized Education Programs (IEPs) and committee involvement in the IEP process; transition from school to post school; identification procedures for students with learning disabilities (LD); due process hearings; expulsion and suspension of students with disabilities; and a host of other, less significant changes" (Smith, 2005). However, the primary purpose of IDEA remained intact which focused on providing a free, appropriate public education for children with disabilities (Smith, 2005).

Multi-Tiered System of Support

Multi-Tiered System of Support, MTSS, was a multi-tiered framework which promoted school improvement through engaging, research-based academic and behavioral practices (North Carolina Department of Public Instruction, 2019a). A Multi-Tiered System of Support helped schools and districts organize resources through alignment of academic standards and behavioral expectations, implemented with fidelity and sustained over time, in order to enable every child to successfully reach his/her fullest potential (Colorado Department of Education, 2016).

MTSS Components

Leadership

When principals apply their leadership influence with all students in mind, they give rise to equitable learning environments for students with all types of learning needs (Kozleski & Huber, 2012). Key leadership activities for installing a system to support diverse student needs

include (a) creating a culture of shared vision, (b) building a collaborative work structure, (c) enabling need-based teacher supports (e.g., professional learning), (d) using data to make decisions, and (e) reviewing and participating in policy changes in collaboration with local educational agencies (LEA) administrators to prompt changes (Furney et al., 2005). The role of the principal is the most critical component to the success of an MTSS (McCook, 2006). He/she must take the lead role and participate in all aspects of the framework if success for all students is to be achieved (McCook, 2006). A successful leader surrounds themself with competent individuals who are willing to go above and beyond to meet the needs of their students. These individuals are often part of the School Leadership Team and are responsible for helping implement and lead change. A school leader uses this team to help support the implementation of MTSS by collaborating and promoting a vision and mission to school staff, allocating resources for planning and implementing instruction and intervention, and ensuring that staff have the data needed for data-based problem-solving.

Data-Based Problem Solving

Using data for accountability in developing, guiding, and sustaining organizational change in schools leading to improvements in student learning has been the focus of much research on systemic efforts to improve schools (Fullan & Steigelbauer, 1991). Within the RtI framework, one of the most critical and complex elements is that of data-based decision making, which relies on measurement of the level (i.e., performance at a static point in time) and slope (i.e., amount of progress across time) of student performance (Fuchs, 2004). Instructional leaders within school systems are expected to use the data that they have readily available to make decisions based on what is best for their schools. In the State of North Carolina, the data readily available to educators includes but is not limited to NC End-of-Grade Exams, NC Final Exams,

Kindergarten Entry Assessments, READ 3D Assessments, etc. Data-based decision making plays a central role in MTSS framework implementation, as it is essential for informing instruction and, thereby, supporting the process of individualizing and intensifying interventions (Pentimonti et al., 2017).

Data Evaluation/Universal Screening

One aspect of a schoolwide multilevel prevention framework such as MTSS is a screening system to identify students most at risk for poor learning outcomes. Similar to other fields, such as medicine and public health, screeners are a cost-efficient and relatively quick method for identifying students who may require additional or more in-depth assessment to verify screening results and determine future instructional needs. (Pentimonti et al., 2017). Universal screening is a critical element of any MTSS model; in fact, it has been suggested that without universal screening, MTSS cannot function as intended (Gersten et al., 2011). Universal Screening can be facilitated at the school or district level and should be coordinated by a leadership team (Lane et al., 2012), which may consist of school counselors, teachers, school psychologists, school social workers, and administrators. The leadership team selects the screener, or assessment, that best fits their needs and criteria (Albers & Kettler, 2014).

Typically, students are screened in reading, math, and behavior (Fuchs et al., 2007; Jenkins et al., 2007). In order to obtain reliable data and determine if students are making growth or not, screenings or benchmark data, are often collected in the beginning of the year, middle of the year, and the end of the year. This data is then used by educators to determine again if growth is being made and helps determine exactly where the student is working in regard to grade equivalency. By analyzing classroom or grade-level universal screening data, decisions can be made about whether the core curriculum is meeting the instructional needs of the majority of the

students. When a screening tool is both reliable and valid, confidence increases in terms of the accuracy with which the tool can be used to appropriately identify students at risk for poor learning outcomes and make instructional decisions (Pentimonti et al., 2017). When screening students, it is important to note the focus is on all students, not just those students one may believe are at risk. Screening is not a diagnostic test; it is brief, reliable, and should be a valid assessment to identify which students may need additional assessments, such as progress monitoring or diagnostic assessments, or additional instructional support.

Three Tier Instruction/Response to Intervention

There are many factors that have to be taken into consideration when trying to determine why children struggle in school. Those factors include but are not limited to growing up in economically disadvantaged settings, low proficiency in English, emotional difficulties, and even inadequate academic instruction (Donovan & Cross, 2002).

In order to grow these students and to prevent them from falling through the cracks, educators have the difficult job of diagnosing students' academic struggles and looking for remedies to grow these students. Over the years, the U.S. Department of Education has passed laws such as the No Child Left Behind Act and Every Student Succeeds Act to provide assistance to economically disadvantaged students through federal funding. In 2004, the U.S. Department of Education also reauthorized the Individuals with Disabilities Education Act. IDEA is a law that makes available a free appropriate public education to eligible children with disabilities throughout the nation and ensures special education and related services to those children.

Once NCLB was reauthorized there was a shift of focus with emphasis placed on early intervention services. States and local LEAs were responsible for adopting a service delivery

model that focused on the child's Response to Intervention (RTI). Educators were responsible for (a) screening all children for academic and behavioral problems, (b) monitoring the progress of children at risk for difficulties in these areas, and (c) providing increasingly intense interventions based on the response to progress monitoring assessments (Vaughn & Fuchs, 2003).

Response to Intervention, a term known by educators, is used to describe a process that provides early, efficient, and research-based strategies for students who are struggling academically and/or socially. Teachers begin to shift their focus from individual student deficits and begin to breakdown the relationship between teaching and learning (Duffy, 2007). RtI uses a three-tiered model (see Figure 2) in order to drill down student weaknesses (Bradley et al., 2005).

As educators work with students they must determine, based off data, whether or not a student must move through the three tiers. If students are unable to grasp a concept and continue to perform below grade level, then they are moved through the tiers. As they move through the tiers the interventions become not only more intense but more individualized as well. Increasing intensity is achieved by (a) using more teacher-centered, systematic, and explicit (e.g., scripted) instruction; (b) conducting it more frequently; (c) adding to its duration; (d) creating smaller and more homogenous student groupings; or (e) relying on instructors with greater expertise (Fuchs & Fuchs, 2006).

Tier I

Tier I focuses on a strong curriculum and effective instructional practices that should serve an estimated 80 to 90% of the student population (North Carolina Department of Public Instruction, 2019b). All students receive high-quality, scientifically based instruction provided by qualified personnel to ensure that their difficulties are not due to inadequate instruction (North

	Tier I Core Instruction	Tier II Supplemental Instruction	Tier III Intensive Instruction
Who	All students	Students who need supplemental supports in addition to core instruction (approximately 20% of students)	Students who need intensive supports in addition to supplemental and core instruction (approximately 5% of students)
What	Evidence-based practices and programs demonstrated to produce good academic and behavior outcomes for the majority of students	Evidence-based practices and programs demonstrated to improve academic and behavior performance in core (Tier I)	Evidence-based practices and programs demonstrated to improve academic and behavior performance in identified skill areas
Effectiveness	If *at least* 80% of all students, in all subgroups, are meeting academic and behavior benchmarks with core supports alone	If *at least* 70-80% of students improve academic and behavior performance toward core (Tier I) benchmarks	If students improve academic and behavior performance in identified skill areas

Figure 2. Multi-tiered system of supports tiers (NC Public Schools).

Carolina Department of Public Instruction, 2019b). Tier I instruction takes place in all settings and with all students. Those students who continue to struggle academically are moved to Tier II.

Tier II

Tier II interventions are put in place, usually in a classroom setting, for those students who are not making adequate progress with Tier I instruction. Tier II intervention is explicit, systematic, and aligned with Tier I instruction. Instructional interventions are differentiated, scaffolded, and targeted based on the needs of individual students as determined by assessment data (North Carolina Department of Public Instruction, 2019b).

Tier III

Tier III focuses on intensive interventions that should serve an estimated 5% of the student population (North Carolina Department of Public Instruction, 2019b). Tier III intensive interventions might result in an evaluation for special education if the student does not respond to increased instructional time that is more explicit, diagnostic, and monitored (Margolis, 2012).

Building Capacity/Infrastructure for Implementation

In order to implement and sustain the Multi-Tiered System of Support strong leadership, along with a foundation of knowledge, resources and organizational structures must be in place. "Strong leadership, professional learning and coaching help sustain the framework and boost educators' capacity to meet performance expectations and students' learning needs" (Nebraska Department of Education, 2019, para. 1).

Building leaders must set up schedules that support multiple levels of instruction. School-based professional development must be institutionalized and structured so that all teachers continuously examine, reflect upon, and improve instructional practice, data-based decision making, and the delivery of interventions. Resources must be provided to support

implementation, and structures need to be established to communicate regularly with parents and teachers. Finally, building teams must be established with clear structures and processes to guide decision making (Gibbons, 2016, para 10).

Progress Monitoring

Progress monitoring is used to assess students' academic performance, to quantify a student rate of improvement or responsiveness to instruction, and to evaluate the effectiveness of instruction. Progress monitoring can be implemented with individual students or an entire class (Fuchs & Fuchs, 2006). Progress monitoring is associated with improved student outcomes for students who are identified by screening measures as at risk for poor learning outcomes. Decades of research indicate that when teachers use progress monitoring to make instructional decisions, student-level data improves and students became more aware of their performance (Fuchs et al., 1984; Stecker & Fuchs, 2000).

As soon as a student is identified as at risk for achievement deficits by the universal screening measure, their progress should be monitored in relation to Tier 1 instruction (Fletcher et al., 2007). Progress should be monitored frequently, at least monthly, but ideally weekly or biweekly (Fuchs & Fuchs, 2006). A student's progress is measured by comparing his or her expected rate of learning (e.g., local or national norms) and actual rate of learning (Fuchs et al., 2008). As data is collected, teachers must determine if students are making adequate progress. If they determine the student is making adequate progress then the interventions in place should continue. Those students who are not responding to the interventions should have a change in interventions as well as a change in the intensity and instructional time. According to the National Center on Student Progress Monitoring, progress monitoring has the following benefits when it is implemented correctly: (1) students learn more quickly because they are receiving

more appropriate instruction; (2) teachers make more informed instructional decisions; (3) documentation of student progress is available for accountability purposes; (4) communication improves between families and professionals about student progress; (5) teachers have higher expectations for their students; and, in many cases, (6) there is a decrease in special education referrals. Overall, progress monitoring is relevant for classroom teachers, special educators, and school psychologists alike because the interpretation of this assessment data is vital when making decisions about the adequacy of student progress and formulating effective instructional programs (Fuchs et al., 2008).

Fidelity

Implementing research-based interventions involves a multitude of educational professionals such as teachers, interventionists, and administrators as well as various levels of service, programs, assessments, decision, and rules (Hill et al., 2012). Implementation fidelity is how well a treatment is executed as prescribed, or the level of adherence to the specific actions of the intervention (Stahmer et al., 2015). Other commonly used terms include treatment integrity, procedural fidelity, intervention integrity, procedural reliability, and procedural adherence.

Two modern reports document the disparity and confusion surrounding Response to Intervention implementation. Zirkel and Thomas (2010) suggested that states have taken a lenient, local choice approach to RTI awaiting additional experience and research while Mellard and Johnson (2008) recognized variability in RTI practices related to efficiency, equity, and viability across 41 schools. Both reports provide evidence that, like many education initiatives, a gap between research and practice exists (Hill et al., 2012).

According to Gresham et al. (2000), over 30% of educational intervention studies they reviewed failed to meet criteria for addressing treatment fidelity (Gresham et al., 2000). "Examination of implementation fidelity, although complicated, is important to advance the understanding of how evidence-based interventions are being implemented in school settings" (Stahmer et al., 2015). It is important to note, when programs are implemented to fidelity the success rate of those programs are profound over those programs that lack that same fidelity and structure. Programs that are implemented with fidelity produce sizable outcomes that are two to three times higher (Durlak & DuPre, 2008).

Istation

Istation, a computer-based reading program, aims to maximize students' reading fluency, comprehension and retention, and academic success. Istation specializes in response to intervention, using a computer adaptive testing system, which is called the Istation Indicators of Progress (Mathes, 2010). Mathes et al. (2014) reported that the Istation reading program for early reading (Pre-K through 3rd grade) focuses on the five essential components of reading instruction. These components consist of phonemic awareness, alphabetic knowledge, vocabulary, comprehension, and fluency as mandated by the Elementary and Secondary Act. Istation markets its web-based platform as a tool that provides teachers and other school personnel with easy-to-interpret, web-based reports that detail student strengths and deficits. Readers are individually assessed in approximately 30 minutes with an engaging computer-adaptive assessment. Based on their results, students are effortlessly placed in interactive online instruction. Struggling students are routed through reteach lessons, and teachers are given instant reports to monitor student progress. Each Priority Report directs teachers to specific skills-based, small-group lessons for targeted reading intervention (Mathes et al., 2016).

Istation uses a three-tier grouping system, similar to the tiers associated with MTSS, to place students in groups where instruction can be differentiated by the classroom teacher. Students with a score above the 40th percentile for their grade are placed into Tier 1. Students with a score at or below the 20th percentile are placed into Tier 3. These tiers are used to guide educators in determining the level of instruction for each student. That is, students classified as: (a) Tier 1 are performing at grade level; (b) Tier 2 are performing moderately below grade level and in need of intervention; (c) Tier 3 are performing seriously below grade level and in need of intensive intervention (Mathes et al., 2014). Istation claims to serve over 4.4 million students in 48 states, several countries around the world, and correlates to individualized state standards and Common Core standards.

mClass

mClass, Reading 3D is a validated, research-based formative assessment tool which combines the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment with the Text Reading and Comprehension (TRC) assessment (Wireless Generation, n.d.). These tests, when combined, measure and analyze important reading skills that children must master in order to become proficient readers. The skills measured to students individually using an online, teacher directed platform, consist of first sound fluency (FSF), Phoneme Segmentations Fluency (PSF), Letter Naming Fluency (LNF), Non Sense Word Fluency (NWF), Oral Reading Fluency (ORF), and Text Reading Comprehension (TRC). Once the subtests are administered and completed, data is gathered, calculated, and stored into the mClass platform. Individualized student reports provide information about each student's reading progress, their strengths and weaknesses, all while the platform tracks the student's progress throughout the school year. The State of North Carolina adopted mClass: Reading 3D to meet state mandates to ensure all

students are able to read by third grade (Wireless Generation, n.d.). Beginning in 2013, the state of NC assessed students in order to measure progress, diagnose difficulties, and inform instruction and remediation needs (NCDPI, 2012). These assessments were given at the beginning of year (BOY), middle of year (MOY), and end of year (EOY) with teachers administering progress monitoring assessments between each benchmark. Tracking the progress of students is called progress monitoring.

The measures include benchmark assessments that are administered three times a year, as well as ongoing assessments for progress monitoring more frequently, focusing on students at risk (Wireless Generation, n.d.). Amplify's mClass: Reading 3D is observational reading assessment software for students in grades K-5 (Wireless Generation, n.d). According to the Amplify website, the company claims they worked with more than 9,000 districts and 21,000 schools. Today, Amplify serves five million students in all 50 states.

mClass/Istation Controversy

As part of NC's Read to Achieve initiative, the state of NC adopted the online assessment platform to meet state mandates to ensure all students are able to read by third grade (North Carolina Department of Public Instruction, 2019c). In place since 2013, mClass: Reading 3D has been used throughout NC Public Schools to gain a better understanding of student strengths and weaknesses.

According to North Carolina Public Documents, NC State Superintendent Mark Johnson formed a committee to assist in evaluating several programs aimed to meet North Carolina's Read to Achieve mandate. In November 2018, this same committee met at DPI headquarters in Raleigh to review proposals from various vendors. After the meetings, notes from those meetings

look as if to show the evaluation committee rated Amplify as its top choice, followed by Istation, Curriculum Associations, and NWEA (Marchello, 2019).

Public records showed Johnson ignored the endorsement from an evaluation board, which he had formed, in which they said the state should continue to use the mClass. Superintendent Johnson continued to share that Istation was the best diagnostic tool for the state of North Carolina. Superintendent Johnson was also critical of the work completed by the evaluation committee and continued saying there were reasons why Amplify was not picked; however, he was unable to publicly disclose until the company's protest of the contract was resolved (Hui, 2019). Furthermore, Superintendent Johnson said, "the people of North Carolina elected me to lead positive change and that is exactly what I will continue to do" (Hui, 2019, para. 3).

Superintendent Johnson, aware of the public and educators' concerns regarding the choice to award Istation with the state contract, sent an email in June to representatives of the North Carolina School Superintendents' Association clarifying his position (Parmenter, 2019). Johnson's email reiterated his claim that no consensus had been reached in regard to mClass being the unanimous choice. Furthermore, Superintendent Johnson shared that those who were involved in the procurement process had signed nondisclosure agreements and "are not to share any information about the process with anyone outside the team" (Parmenter, 2019, para. 2).

In response to the decision to award Istation with the contract, Amplify has filed an official motion with North Carolina's Department of Public Instruction to suspend the newly awarded contract while allegations of tampering are investigated. As a reaction to a recently filed motion, House Democrats along with a handful of Republicans joined together on July 22, 2019 to pass an amendment to a bill allowing school districts to use alternatives to Istation. In

response, Senate Republicans overruled the bill a couple days later on June 24th (Hui, 2019). As of July 31st, North Carolina's Department of Public Instruction continues to stand by Mark Johnson's decision to award the K-3 reading diagnostic tool to Istation.

Summary

A review of the literature examined the differences between NCLB, ESSA, and IDEA, federally mandated educational laws, designed to give equal educational opportunities to all students no matter their educational level or disability. This chapter gave an in-depth detail of the Multi-Tiered System of Support framework, its components, and how those components are used to assist every child to successfully reach his/her maximum potential. The chapter concluded with information pertaining to the computer-based assessment programs mClass and Istation and the controversy between the two in the state of North Carolina. The following chapter will outline the methodology for this action research study. Chapter 3 will also focus on the effects of research-based interventions within the MTSS framework on student literacy in grades K-2 and the teacher's perceptions of the implementation of MTSS.

CHAPTER 3: METHODOLOGY

The purpose of this mixed methods action research study was to determine the effectiveness of research-based interventions within the Multi-Tiered System of Support framework. This study examined teachers' perceptions of research-based interventions and the MTSS framework's effectiveness in closing the achievement gap in literacy for grades K-2. Over a one-year period, surveys were given, and school-based discussions were held regarding research-based interventions, MTSS implementation and its effectiveness. During the same time frame, a school-based problem-solving team met weekly to discuss student shortfalls as well as which interventions would be implemented in K-2 classrooms throughout Creekside Elementary. During this time data was collected and evaluated on student progress.

Anaylsis of the Multi-Tiered System of Support and data collection was needed to better understand the strengths and weaknesses of the framework and provided a richer perspective of the importance of implementation fidelity. There were two central questions the scholarly practitioner attempted to answer in this study.

1. What were the effects of implementing research-based interventions within the MTSS framework on student literacy in grades K-2?
2. How do teachers' perceptions of the MTSS framework change throughout the implementation of research-based interventions on student literacy in grades K-2?

The first research question provided quantitative data collected from fifteen classrooms within Creekside Elementary. The data collected and analyzed was from the Amplify mClass platform as well as Istation. The mClass program as well as Istation measured the development and progress of reading skills of Creekside students within the fifteen designated classrooms. The second research question provided qualitative data in regard to how teachers

viewed the implementation of research-based interventions within the MTSS framework and its direct impact on student achievement in literacy.

Research Design and Rationale

A plethora of students at Creekside Elementary, like their peers throughout the United States, were reading below grade level and had a difficult time closing the achievement gap as they pass through grades K-12. Creekside's Text Reading Comprehension data from the end of the 2017-2018 school year showed 25% of K-2 students were performing far below grade level while 12% were performing below proficiency. The scholarly practitioner in this study analyzed how the implementation of research-based strategies within the Multi-Tiered System of Support framework impacted student achievement and how teachers at Creekside Elementary perceived the overall framework.

Research is the process of collecting, analyzing, and interpreting data in order to understand a phenomenon (Leedy & Ormrod, 2001). The three common approaches to conducting research are quantitative, qualitative, and mixed methods. To help understand the difference between quantitative research and qualitative research, one can associate words – qualitative - rather than numbers - quantitative (Creswell & Creswell, 2018). Qualitative research entails data collection, analysis, and interpretation of the quality of a phenomenon rather than how often the phenomenon occurs (Mertler, 2019). It is conducted in natural settings, meaning researchers do not manipulate the environment and study phenomenon as they are (Given, 2008). Quantitative research tests theories by investigating the relationship among variables (Creswell & Creswell, 2018). It relies on the collection and analysis of numerical data to describe, explain, or predict a phenomenon (Mertler, 2019). While many studies tend to be more qualitative than

quantitative or vice versa, a mixed methods approach incorporates both quantitative and qualitative research designs.

Action research is systematic inquiry done by teachers or other individuals in an educational setting to gather information about and subsequently improve, the ways their particular educational setting operates, how they teach, and how well their students learn (Mills, 2018). Educational action research, whether led by a single teacher, a group of colleagues who share an interest in a common problem or by an entire school's staff always involves a seven step process (Sagor, 2000). The seven steps include selecting a focus, clarifying theories, identifying research questions, collecting data, analyzing data, reporting results, and taking an informed action (Sagor, 2000).

This mixed methods action research study investigated the impact of research-based interventions on student achievement and teacher perceptions. The research questions being answered in this study utilized both quantitative and qualitative data in order to provide a better understanding of the effectiveness of the MTSS framework. The scholarly practitioner in this study collected and analyzed quantitative data using the Amplify mClass platform as well as the Istation Platform. The data was collected and analyzed at the beginning and middle of the 2019-2020 school year in order to better determine student growth and understanding. During this time, research-based interventions were incorporated on a weekly basis to those students in grades K-2 who were working below grade level.

Quantitative data in the form of surveys and interviews were collected and analyzed to help determine teachers' perceptions of research-based interventions within the MTSS framework over a one-year period. The scholarly practitioner in this study anticipated these surveys, interviews, and questionnaires, given to K-2 teachers throughout Creekside Elementary,

would lead to a better understanding of teachers' perceptions and beliefs of the MTSS framework and its relation to student growth.

Sample

For this study, the scholarly practitioner chose to utilize homogenous sampling, a technique where individuals throughout the study have a common characteristic or trait (Mertler, 2019). All participants in this study were students at Creekside Elementary who were enrolled in kindergarten, 1st grade, or 2nd grade. The scholarly practitioner in this study focused on approximately 50 students in grades K-2 who were working below grade level according to data, classroom observations, and teacher input. Throughout the study, the practitioner focused on the effect of the research-based interventions being implemented and their direct impact on student literacy in grades K-2. In other words, the scholarly practitioner sought to determine if there was a correlation between student growth and the implementation of research-based strategies. The practitioner also wanted to determine the teachers' perceptions of the impact of implementation on student literacy in grades K-2. Throughout the study, the scholarly practitioner worked with a total of 15 teachers, more specifically five kindergarten teachers, five first grade teachers, and five second grade teachers. The teachers had a combined total of 154 years of teaching which averaged out to 10.2 years of teaching experience.

In order to help structure the design of this study, the Plan-Do-Study-Act (PDSA) cycle served as the framework for improving the implementation of research-based strategies within the Multi-Tiered System of Support framework at Creekside Elementary (see Figure 3). According to Langley et al. (2009), the four steps in the PDSA cycle consist of: (1) Planning: During this step, the scholarly practitioner determined the objective, asked questions "who, what, where, when", constructed a plan to carry out the cycle, and planned for data collection to help

Note. (National Person-Centered Collaborative PDSA).

Figure 3. Plan-Do-Study-Act Model.

answer the questions. (2) Do: In this stage, the scholarly practitioner carried out the plan, collected data based on observations, and began to analyze the data collected. (3) Study: During the study phase, the data and results gathered from the "do" phase were evaluated. Data was compared to the expected outcomes to see any similarities and differences. Lastly, the scholarly practitioner summarized what was learned. (4) Act: In the final phase, the scholarly practitioner determined what changes, if any, needed to be made and then decided if those changes could be implemented or not. If no changes needed to be made, then the scholarly practitioner looked to implement the finalized plan of action. For each action research cycle within this study, the PDSA framework was utilized to help guide the scholarly practitioner.

Procedures

The scholarly practitioner in this study focused his attention on teachers in grades K-2 at Creekside Elementary to better understand how they implemented research-based reading interventions to their students. The goal of the study was to determine the effectiveness of research-based strategies within the Multi-Tiered System of Support framework while examining teachers' perceptions of MTSS and their effectiveness regarding student achievement and academic growth.

Before implementation began, the practitioner was required to obtain written permission from Pitt County Schools Superintendent, granting consent to conduct the proposed study (see Appendix B). Once consent was granted, the scholarly practitioner obtained Institutional Review Board, or IRB, approval (see Appendix A) which was then followed by a letter of introduction to the fifteen teachers participating in the proposed study. The scholarly practitioner sought permission from those fifteen participants while relaying the message that the data collected was

confidential, their identities would be protected, and minimal to no risk was associated with this study (see Appendix C).

Action Research Cycle 1

The purpose of the first Action Research Cycle was to collect and examine mClass data from the 2018-2019 school year. Tier 2 and Tier 3 data pertaining to mClass results were collected and analyzed. The scholarly practitioner also administered a teacher survey, via Qualtrics, to gain a better understanding of the K-2 teacher beliefs regarding research-based interventions within the MTSS framework and their opinions on how they were implemented at Creekside Elementary.

Action Research Cycle 1 – Plan

In this first Action Research Cycle, data from the 2018-2019 school year was used to help compare the impact of research-based interventions within the MTSS framework. The purpose of this data collection was to allow the scholarly practitioner to have a year's worth of data before the implementation of research-based interventions within the MTSS framework.

Action Research Cycle 1 – Do

The scholarly practitioner collected student baseline data from students in grades K-2 who participated in the mClass Reading 3D assessment during the 2018-2019 school year. The data collected consisted of kindergarten, first and second grade students who were in Tier 2. The data collected for kindergarten students came from the mClass platform and represented first sound fluency, or FSF, phoneme segmentation fluency, or PSF, Letter Naming Fluency, or LNF, and non-sense word fluency, or NWF (see Figure 4). The data collected for first grade students came from the mClass platform and represent first sound fluency, or FSF, phoneme segmentation fluency, or PSF, non-sense word fluency, or NWF, Oral Reading

Assessment	Abbreviation	K	1st	2nd
First Sound Fluency	FSF	X	X	
Phoneme Segmentation Fluency	PSF	X	X	
Letter Naming Fluency	LNF	X		
Non-Sense Word Fluency	NWF	X	X	X
Oral Reading Fluency	DORF		X	X
Text Reading Comprehension	TRC		X	X

Figure 4. mClass skill implementation guide.

Fluency, or DORF, and text reading comprehension, or TRC (see Figure 4). The data collected for second grade students also came from the mClass platform and represented non-sense word fluency, Oral Reading Fluency, and text reading comprehension (see Figure 4). Each grade level's overall data was displayed in the form of a table. The student composition from each classroom represented a homogenous sample due to the fact all the students participating in the study were struggling academically. Quantitative data in the form of mClass assessment data was gathered from K-2 students in Tier 2 and placed in separate columned charts with each skill highlighted. Once appropriate permissions were granted and IRB approval was complete, participants of the study participated in an electronic survey seeking their opinions regarding research-based interventions and the Multi-Tiered System of Support framework (see Appendix D). The questions in the survey were developed to gain an understanding of the participant's knowledge, misunderstandings, and feelings of research-based interventions and the MTSS framework. Each of the fifteen participants were given the same survey to ensure the fidelity of the study.

Action Research Cycle 1 – Study

Student mClass data was analyzed while the scholarly practitioner looked for trends within the K-2 teacher classrooms. The practitioner recorded trends observed and connections made.

Action Research Cycle 1 – Act

Once all the data was collected and analyzed the scholarly practitioner scheduled a meeting with K-2 teachers to discuss the students' end-of-year growth and analyze trends. Meetings were scheduled with each grade in order to protect the fidelity of the study and to allow deeper data analysis of the students in each grade level. The scholarly practitioner collected

stakeholder feedback and perspectives regarding the student data. The practitioner also sent all K-2 teachers a survey using Qualtrics, created by the scholarly practitioner, seeking stakeholder perspectives and feelings regarding research-based interventions within the MTSS framework (see Figure 5).

Action Research Cycle 2

The purpose of the second Action Research Cycle was to utilize the K-2 teachers' feedback and opinions to develop focus group questions pertaining to the MTSS framework and the implementation of research-based interventions. The scholarly practitioner continued to collect data, this time in the form of qualitative data, to help identify areas of improvement in regard to the MTSS framework and implementation of research-based-interventions.

Action Research Cycle 2 – Plan

In Action Research Cycle 2, the feedback and opinions from K-2 teachers as well as survey data was utilized to help plan Cycle 2. The scholarly practitioner met with two focus groups of K-2 teachers with each group consisting of 8-10 members during the month of December 2019.

Action Research Cycle 2 – Do

After collection and analysis of the survey data, the scholarly practitioner held two focus groups with participants in each group ranging from 8-10 people with each group being asked the same set number of questions. Focus group interviews were selected due to time constraints, the amount of people participating, and because people tend to feed off each other's comments and thoughts during these simultaneous interviews (Mertler, 2019). The scholarly practitioner also chose focus group interviews due to their characteristics such participant's responses tend to

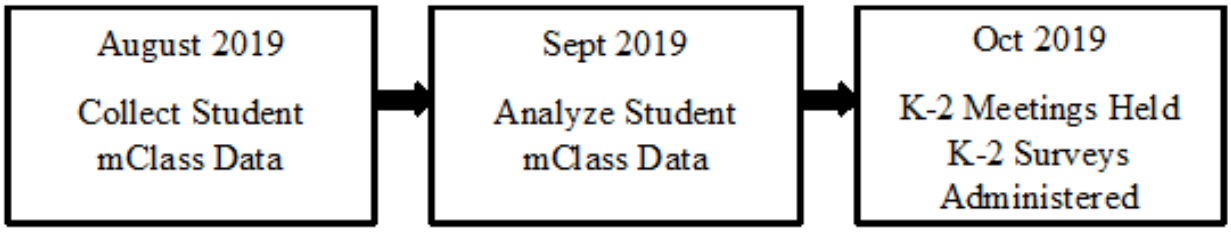

Figure 5. Action research cycle 1 timeline.

be more detailed and informative due to the tendency of people feeding off of each other's responses (Mertler, 2019).

Prior to the focus group interviews, participants were welcomed, given a synopsis of the focus group's purpose, and given some ground rules to ensure fidelity of the research. The scholarly practitioner sought permission from those participating in the focus group to be audio recorded. The scholarly practitioner: (1) developed an interview protocol, (2) located a place to conduct the interviews, (3) used a digital recording device to record all questions asked by the scholarly practitioner and collect all responses, (4) and took anecdotal notes during the interview (Creswell & Creswell, 2018). It was the scholarly practitioner's job to avoid being judgmental of participants' beliefs, comments, and viewpoints, as well as being courteous, professional, and thanked participants once the interviews were complete (Creswell & Creswell, 2018). The scholarly practitioner in this study created focus group questions based off teacher survey data in cycle 1 which helped gain a better understanding of the participants' knowledge, misconceptions, and approaches regarding the implementation of research-based interventions within the MTSS framework. The questions were developed to assist the practitioner in planning next steps to see possible correlations between MTSS and gains in student literacy. The focus group took place after school in Creekside's Data Room during the month of December 2019. The questions for the focus group were based off the teacher survey that was given in October 2019.

Action Research Cycle 2 – Study

Once the focus groups concluded, the scholarly practitioner ensured the quality of the recording and transcriptions to ensure accurate data collection and analysis.

Qualitative data from the focus group questions/discussions were recorded and transcribed by the scholarly practitioner. The scholarly practitioner looked for patterns and

themes, relationships, similarities, as well as differences associated with the participants' beliefs and responses pertaining to research-based interventions within the MTSS framework (Creswell & Poth, 2018; Mertler, 2019). The feedback and data collected was used to discuss and develop an intervention plan, a school wide schedule, and to determine if additional information needed to be collected to help better implement research-based interventions.

Action Research Cycle 2 – Act

The scholarly practitioner used the data and feedback to list commonalities and variances amongst the focus groups. The scholarly practitioner met with all K-2 teachers and shared the results from the focus groups while maintaining confidentiality by not sharing specific responses. The teacher group discussed the similarities and differences determined from the focus groups. The teachers and practitioner used the data to discuss and develop an intervention plan, a schoolwide schedule, and determined if additional information needed to be collected to help better implement research-based interventions. The intervention plan included dates and times for K-2 grade levels to meet, forms for student data to be discussed and recorded, and specific interventions or sets of steps which were used to help the child improve in an area of need (see Figure 6).

Action Research Cycle 3

The purpose of the third and final Action Research Cycle was to implement the improvement strategies developed in Action Research Cycle 2. The scholarly practitioner focused on implementing a new schoolwide schedule as well as providing and implementing effective, research-based strategies. At the end of Cycle 3, the practitioner sent all K-2 teachers the original survey from Cycle 2 again using Qualtrics, to seek stakeholder perspectives and feelings regarding research-based interventions within the MTSS framework. The practitioner

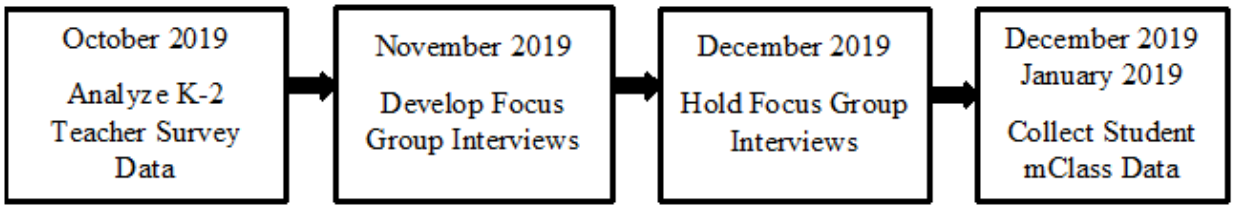

Figure 6. Action research cycle 2 timeline.

planned to meet with the original two focus groups during the month of June 2020 using new focus group questions based off the survey results from Cycle 3; however due to the COVID-19 pandemic response which will be discussed in detail in Chapter 4, the focus group interviews were replaced with teacher surveys which required open ended responses (see Appendix F). Finally, K-2 student tier data was collected, analyzed, and shared with all K-2 teachers.

Action Research Cycle 3 – Plan

The scholarly practitioner in this study scheduled a time to meet with all K-2 teachers to share the new schoolwide schedule and plans regarding the implementation of research-based strategies developed in Action Research Cycle 2.

Action Research Cycle 3 - Do

The scholarly practitioner in this study, along with K-2 teachers at Creekside Elementary, implemented the newly developed schoolwide schedule at the start of the 2019-2020 second semester. From January 2020 to March 2020, the scholarly practitioner as well as the school's problem-solving Team worked with K-2 teachers to help determine which research-based interventions best met each student's needs determined by each student's individual deficiencies. Individual student deficiencies were determined by the Istation data collected, more specifically ISIP and ORF reports. Weekly meetings were held to discuss student progress or lack of progress with all discussions and results being recorded using the individual student data collection forms. At the close of the 2019-2020 school year, K-2 teachers participated once again in the original survey from Cycle 2 while being asked to partake in a second focus group seeking stakeholder perspectives and feelings towards research-based interventions within the MTSS framework. Due to the COVID-19 pandemic, focus group interviews were replaced with teacher surveys which required open ended responses. The scholarly practitioner was unable to update K-2

teacher participants on the progress of the study again due to the COVID-19 pandemic. Focus group questions in Cycle 3 differed from those focus group questions in Cycle 2 and were created based on the newest teacher survey results from Cycle 3.

Action Research Cycle 3 – Study

At the conclusion of the 2019-2020 school year, the scholarly practitioner reviewed the qualitative data from the focus group questions/discussions and looked for patterns and themes, relationships, similarities, as well as differences associated with the participant's beliefs and responses pertaining to research-based interventions within the MTSS framework (Creswell & Poth, 2018; Mertler, 2019).

Tier 2 and Tier 3 quantitative student data pertaining to Istation results, more specifically ORF and ISIP data, was collected and analyzed. The scholarly practitioner reviewed and compared student Istation data from the middle of the year, January to March, as well as student movement between Tier 2 and Tier 3. All student data was collected and placed in separate columned charts with each skill highlighted

Action Research Cycle 3 – Act

The scholarly practitioner used the data and feedback collected from the focus group interviews and shared it with all K-5 stakeholders at Creekside Elementary's October staff meeting. The goal of sharing the data collected was to provide Creekside's K-5 teachers with advantageous information pertaining to K-2 teacher perspectives and recommendations regarding the implementation process of research-based interventions (see Figure 7).

Ethical Considerations

During this study, ethical considerations were analyzed during the research planning phase and have been reviewed and followed throughout the study. To start, the scholarly

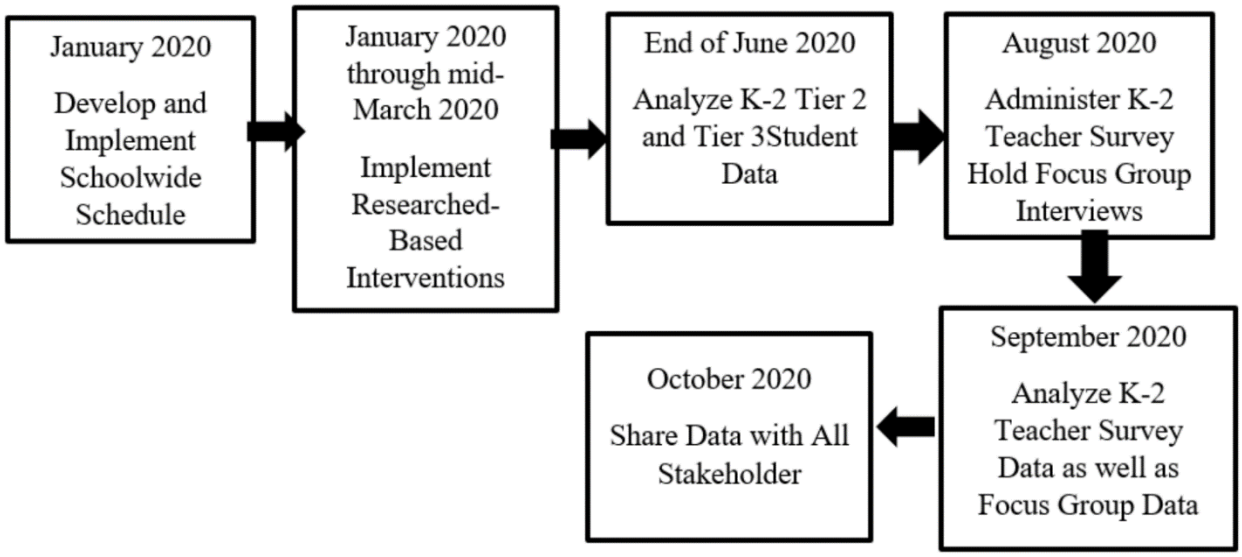

Figure 7. Action research cycle 3 timeline.

practitioner applied for local Internal Review Board approval from East Carolina University. Before applying for approval, the practitioner successfully completed the necessary course work in the Collaborative Institutional Training Initiative (CITI) which consisted of thirteen modules focusing on Social / Behavioral Research Investigators and Key Personnel. The scholarly practitioner in this study participated and passed the following modules prior to any research being initiated: Belmont Report and Its Principles, History and Ethical Principles, Defining Research with Human Subjects, The Federal Regulations Assessing Risk, Informed Consent, Privacy and Confidentiality, Research with Prisoners, Research with Children, Research in Public Elementary and Secondary Schools, International Research, Internet-Based Research, and Vulnerable Subjects - Research Involving Workers/Employees. The purpose of these CITI modules provided the scholarly practitioner a better understanding of confidentiality and privacy in regard to the participants in this study.

Participants in this study have been chosen by the scholarly practitioner based on the needs of the students at Creekside Elementary. This means teachers in grades K-2 were the sole participants of this study. These participants had direct knowledge of the mClass and Istation platform and understood the data collection processes that were used throughout the study.

Per Dr. Steve Lassiter, Pitt County Schools Associate Superintendent of Curriculum and Instruction, Pitt County Schools, or PCS, receives a high number of outside research requests every year. With regard to research required for dissertation completion or a general research study, internal employees and external parties must complete appropriate paperwork and submit to PCS Educational Programs and Services for review. No employee of PCS is allowed to issue letters of support or approve research in schools before receiving approval from Educational Programs and Services. Therefore, before any research was shared or completed at

Creekside Elementary School, the scholarly practitioner completed the appropriate paperwork and submitted to PCS Educational Programs and Services for review. It was noted by PCS, in an effort to protect instructional time, research requests submitted late in the school year would be considered on a case-by-case basis or returned to the scholarly practitioner for resubmission in the fall.

Before the research began, the scholarly practitioner formally met with each participant to inform them of the study, its purpose and their rights. The purpose of these meetings was to be transparent so participants could make an informed decision whether to participate or not. Survey questions and interviews were provided to participants before being formally administered which again allows participants the opportunity to decide whether to participate or not. The scholarly practitioner ensured the reliability of the study through the use of straightforward connections between the study, the data collection, and the findings. The practitioner directly quoted participants, kept their responses confidential and anonymous, and kept all data stored in a password protected database.

This study complied with institutional ethical standards in conducting research. The scholarly practitioner sought advice and followed the direction of the university advisor/dissertation chair to guarantee all applicable methods were taken to ensure ethical implementation.

Instrumentation

According to Taylor (2012), "to be successful in the content areas, students must have the reading skills necessary to navigate through multiple texts and so many of the students who enter middle school and more specifically high school are failing these required disciplines due to poor reading skills (p. 57)." Forty-nine percent of students at Creekside Elementary transition to

middle school reading on grade level. The scholarly practitioner in this study aimed to implement research-based strategies and strategically implement the Multi-Tiered System of Support framework to those students in grades K-2 with the hope to close the reading achievement gap in grades K-5.

In this mixed methods approach, the scholarly practitioner utilized several different instruments to collect and analyze data pertaining to research-based strategies and their effect on K-2 Literacy. To assist in gathering the necessary information, the scholarly practitioner collected qualitative data in cycles. Qualitative data was collected through teacher surveys and focus groups over a one-year period. Teacher survey questions in this study were predetermined, developed by the practitioner, and focused on teachers' perceptions of research-based strategies and the MTSS framework. Whereas, teacher focus group questions were created, by the scholarly practitioner, off teacher survey responses. In order to maintain fidelity and credibility, the teacher participants in this study were asked the same survey questions throughout the cycles, however focus group questions changed from Cycle 2 to Cycle 3 based on survey results. The participants' responses were kept confidential and are password protected.

K-2 student data, in the form of quantitative data, again in cycles, was collected using the Amplify mClass and Istation platforms. Student data was collected several times within a one-year timeframe. In order to ensure the credibility of the student data, all students were given the same assessments using the Istation platform. Results were kept confidential, and the data collected again is password protected.

Role of the Scholarly Practitioner

The scholarly practitioner in this study was the current Principal at Creekside Elementary (CSE) who has fourteen years' experience in the field of education. The scholarly practitioner

had direct knowledge of the fifteen participants all of whom were educators at CSE as well as direct knowledge of those students who were receiving direct, research-based interventions, and whose data was being collected and analyzed.

Despite being the principal at CSE, the scholarly practitioner completed the module training associated with the Collaborative Institutional Training Initiative (CITI) program. The purpose of these CITI modules provided the scholarly practitioner a better understanding of confidentiality and privacy relating to the participants in this study. To ensure the fidelity and integrity of this study, the scholarly practitioner sought and obtained approval from East Carolina University's Institutional Review Board (IRB). The practitioner began data collection and analysis once IRB approval was granted, however, also used preexisting data to gain a better understanding of the student academic deficiencies.

Before the research began, the scholarly practitioner met with the participants of the study to inform them of the study, its purpose and their rights. Participants were given a detailed account of the study's procedures. During this meeting, all participants were notified that participation was strictly voluntary. The scholarly practitioner received written permission from the participants before any surveys were conducted and data was collected and analyzed. Before the focus group began, the scholarly practitioner again clarified the purpose of the study and informed participants that they would not be compensated or rewarded for their participation. Participants were also informed that there were no penalties for non-participation or for leaving the study before it ends.

It was the goal of the scholarly practitioner to remain unbiased in this study as any objectivity would compromise the nature of this study and its findings. It was the responsibility

of the practitioner to remain in control during the study, to ensure that all interviews and data collection were performed to fidelity, and that all participants adhered to the study's guidelines.

Summary

This mixed methods action research study was aimed to help determine the effectiveness of research-based interventions within the Multi-Tiered System of Support framework. The scholarly practitioner used the PDSA cycles of inquiry to help determine the effects of research-based interventions within the MTSS framework on student literacy in grades K-2. The scholarly practitioner also sought the K-2 teachers' perceptions at Creekside Elementary regarding implementation of research-based interventions in grades K-2. In this study, quantitative data in the form of student performance data using the mClass and Istation platforms was used to help determine the effect of research-based interventions on struggling K-2 students. Qualitative data in the form of teacher surveys and focus group responses was used to gain a better understanding of teachers' perceptions at Creekside Elementary on the implementation of research-based interventions on student literacy in grades K-2. The purpose of collecting both quantitative data and qualitative data was to allow the scholarly practitioner to gain a better understanding of the research questions being asked.

Chapter 4 will framework the findings from this study and provide results regarding the data collected and analyzed.

CHAPTER 4: RESULTS

The scholarly practitioner in this mixed methods action research study aimed to study the effectiveness of research-based interventions within the Multi-Tiered System of Support framework as well as examine teachers' perceptions of research-based interventions that were implemented to K-2 students who were working below grade level. The quantitative data in this chapter represents K-2 student progress over a one-year period after research-based interventions were implemented. The qualitative data represented in this chapter are the findings from teacher surveys and focus groups which were conducted by the scholarly practitioner.

COVID-19 Pandemic

This problem of practice was focused on the implementation of research-based interventions and their impact on student growth in grades K-2 at Creekside Elementary. The scholarly practitioner also examined how teachers' perceptions of the MTSS framework changed throughout the implementation phase of the research-based interventions in question. This section will provide and analyze the qualitative and quantitative data collected by the scholarly practitioner in order to determine the effectiveness of the interventions that were put into place, as well as the teachers' perceptions of those interventions and the MTSS framework. Due to the worldwide COVID-19 pandemic, the scholarly practitioner's proposed timeline as well as the scholarly practitioner's data collection methods have been altered.

The epidemic of developing communicable diseases can pose a great threat to public health worldwide. An epidemic is caused by viral cross-species transmission from animals to human (Liangjun et al., 2020). In December 2019, an outbreak of unusual pneumonia caused by unknown infection was reported in Wuhan, China. Doctors at Wuhan University, unsure of what they were dealing with, began collecting samples from the two patients exhibiting pneumonia

like symptoms on January 2, 2020. Within six days, on January 8th, genome comparisons and evolutionary analyses were performed. Those results indicated that the two patients in fact did not have pneumonia but were rather infected with the Coronavirus, also known as COVID-19.

In just seven months, the world has become a different place as the coronavirus disease has brought countries to a standstill. Hospital systems have had to adjust to new everyday norms and have been pushed to the brink while the global economy continues to experience difficult times and hardships. According to the COVID-19 Dashboard by the Center for Systems Science and Engineering at Johns Hopkins University (JHU) (n.d.), as of February 3, 2021, over 2,265,935 deaths have been attributed to COVID-19 while 57,939,599 people have recovered from the illness worldwide. In the United States alone, as of February 3, 2021, COVID-19 has been confirmed in 26,101,598 individuals with 450,626 deaths.

The World Health Organization (Who timeline - Covid-19, 2020), or WHO, states that a cluster of pneumonia-like cases began to spike in the city of Wuhan as early as January 4th. On January 5th, WHO published its first official report on the new virus (AJMC, 2020). Their publication contained risk management and advice as well as shared the location of the first known outbreak. On January 10th, as the number of cases began to rise, WHO distributed a comprehensive package of technical guidance online with advice to all countries on how to detect, test and manage potential cases, based on what was known about the virus at the time. This information and guidance were shared with health directors and health agencies worldwide (AJMC, 2020).

According to the Center for Disease Control and Prevention (2020), COVID-19 spreads rapidly from person to person. Their studies have shown the more closely a person interacts with others and the longer that interaction, the higher the risk of COVID-19 spread. Although this is a

new disease and research on COVID-19 is still being conducted, many researchers, doctors, and scientists believe the virus spreads through the air by coughing or sneezing, through close personal contact such as touching and shaking hands or through touching your nose, mouth or eyes before washing your hands (North Carolina Department of Health and Human Services: About COVID-19, 2020).

Since many believe COVID-19 spreads easily and rapidly, the Center for Disease Control, also known as CDC, shared that limiting close face-to-face contact with others is the best way to reduce the spread of the virus. Social distancing, also called "physical distancing," has been at the forefront as the world battles COVID-19. The terms, interchangeable, mean keeping a safe space between yourself and other people who are not from your household. Social or physical distancing, staying at least 6 feet, or about 2 arms' length, from other people who are not from your household in both indoor and outdoor spaces has been a common practice in combination with other everyday preventive actions to reduce the spread of COVID-19, including wearing cloth face coverings, avoiding touching your face with unwashed hands, and frequently washing your hands with soap and water for at least 20 seconds (Center for Disease Control and Prevention, 2020).

On Friday, March 13, 2020 schools in North Carolina were open and business was as usual. However, in the blink of an eye, a global pandemic shut down countries near and far including the United States. The Coronavirus or COVID-19 became the talk around every dinner table and the headline on every news outlet. State leaders, local superintendents, and teachers across the nation were faced with a decision that was hard to fathom. Schools across the nation were ordered to close to help prevent the spread of this deadly virus. More specifically, Governor

Roy Cooper announced that North Carolina Public Schools would be closed for all students and faculty beginning March 16th.

During the first two-weeks following school closures, Pitt County Schools or PCS, the district in which this study took place, focused on ensuring students had access to two meals a day. The school system also provided work packets for all students which were created by the district's curriculum specialists. Beginning on March 30th, teachers in the PCS district began to offer online supplemental instruction. From March 30th until May 22nd, each school was tasked with providing whatever technology devices they could spare to assist those families that needed a device. When online access was not accessible, comparable paper/pencil learning packets were created by teachers for students. Pitt County School's goal was to extend learning and to reach as many students as possible during this unique time. Exceptional Children's staff, school psychologists, school counselors, and Academically and Intellectually Gifted staff worked together to provide content and additional support to students with disabilities.

This period from March 30th through May 22nd became known as Pitt County Schools COVID-19 remote learning time. Each week, students with online access met with teachers using a variety of virtual platforms such as Canvas, Google Classroom, and Seesaw. Teachers used Zoom and teleconferencing technology to meet and exchange information with students and parents. School parking lots became hotspots for wireless connectivity and functioned as a distribution center for meals, devices, and instructional work packets. IEP meetings, staff meetings, and family communication all became virtual while the learning curve for teachers, students, and parents became part of their everyday life.

While schools and districts across the nation were doing their best to meet the needs of their students and families, Pitt County Schools was trying to understand how this global

pandemic was affecting families' social and emotional needs. This was a time of sudden loss. All normal routines and schedules were completely halted, and life and school were completely changed. Throughout the pandemic, Pitt County Schools served its community in response to COVID-19. The school district's Child Nutrition team served over one-million meals to its families and had given out over 20,000 devices through individual schools.

Due to the COVID-19 pandemic and the sudden closing of schools, the scholarly practitioner's timeline, data collection methods, and projected amount of data collected have been altered. More specifically, the planned face-to-face interviews and focus group in PDSA Cycle 3 had to be completed through a survey using the same pre-constructed questions. The qualitative data from the focus group interviews were recorded using Google Sheets. Participants' responses were then transcribed and analyzed by the scholarly practitioner to identify common themes, or beliefs, among the K-2 teachers. The timeframe for quantitative data collection had to be decreased from a proposed five-month data collection cycle to a two-month data collection cycle. Due to this altered data collection timeframe, the scholarly practitioner used pre-existing data to help determine the effects of implementing research-based interventions on K-2 literacy.

The pre-existing data collected and used in this study, due to the COVID-19 pandemic, was designed to help measure the success of the research-based interventions being implemented at Creekside Elementary. That pre-existing data, collected from October through December 2019, originated from the Istation Platform. The Istation data was readily available to the scholarly practitioner due to North Carolina's Read to Achieve, RTA, law. Read to Achieve, a program created in legislation and approved by the North Carolina General Assembly in July 2012, has components which NC Public Schools must adhere to in hope of raising reading

proficiency for students in kindergarten through third grade. Istation, one of several of North Carolina's RtA diagnostic tools, was elected by the North Carolina Department of Public Instruction to support the Read to Achieve (RtA) diagnostic and was adopted by all North Carolina Public Schools for the 2019-2020 school year.

Introduction

Since the instructional practices of teachers impact the performance outcomes of their students (Marzano, 2003), teachers must be prepared to work collaboratively and utilize evidence-based teaching practices which both challenge and motivate all their students. The use of research-based interventions while focusing on the implementation of these interventions is a critical variable for closing the achievement gap (Kretlow & Bartholomew, 2010). The implementation alone of a multi-tiered system of support is not adequate enough to provide assurance that an effective, strategically designed intervention program has been successfully implemented (Gibbs, 2011). The intricacy of the intervention and the teacher's understanding of the intervention could have a direct impact on the desired results. The time it takes for staff to implement the intervention, staff perceptions about the effectiveness of the intervention and the availability of support and feedback for staff also impact integrity (Klingner et al., 2003).

The problem of practice addressed in this study focused on the effects of implementing research-based interventions within the MTSS framework and their impact on student literacy in grades K-2. This study also investigated teachers' perceptions of the MTSS framework throughout the implementation of the research-based interventions. The following questions were addressed in this study:

1. What are the effects of implementing research-based interventions within the MTSS framework on student literacy in grades K-2?

2. How do teachers' perceptions of the MTSS framework change throughout the implementation of research-based interventions on student literacy in grades K-2?

Participants

The participants in this study consisted of fifteen kindergarten through second grade teachers. Of the fifteen female participants, three of the participants were African-American while the remaining twelve participants were Caucasian (see Table 1). The scholarly practitioner throughout this study worked with five kindergarten teachers, five first grade teachers, and five second grade teachers who had combined a total of 154 years of teaching, equating to an average of 10.2 years of teaching experience. Of the fifteen teachers, four teachers had 1-5 years of teaching experience, three teachers had 6-10 years' experience, four teachers had 11-15 years of experience, three teachers had 16-20 years' experience, and one teacher had over 20 years of teaching experience (see Table 2). Throughout this study the scholarly practitioner held two separate focus group interviews which took place in Action Research Cycles 2 and 3. The demographics of the participants and their years' experience are represented in Table 3.

Throughout the study, students in kindergarten through second grade continuously moved throughout the different tiers, based on how they responded to the research-based interventions being implemented. At the start of the 2018-2019 school year, tier 2 consisted of 233 kindergarten students, thirty-nine first grade students, and twenty-seven second grade students for a total of eighty-four tier 2 students. Of the eighty-four students, 54% of the students were females while 46% of the students were males. To start off the 2019-2020 school year, thirty kindergarten students, forty-six first grade students, and twenty-four second grade students were in tier 2 for a total of ninety students. Of those ninety students, 55% of the tier 2 students were females while 45% of the students were males.

Table 1

Demographics of Creekside Elementary Teacher Participants

Grade Range	White		African American	
	Male	Female	Male	Female
K	0	4	0	1
1st	0	4	0	1
2nd	0	4	0	1
Total	0	12	0	3

Table 2

Creekside Elementary Teacher Participants' Years of Experience

	Years				
Grade Range	1-5	6-10	11-15	16-20	20+
K	2	1	0	2	0
1st	1	2	2	0	0
2nd	0	2	2	0	1
Total	3	5	4	2	1

Table 3

Demographics of Creekside Elementary's Focus Group Participants

Participants	Years Exp	Sex	Race
#1	12	F	W
#2	17	F	W
#3	11	F	W
#4	5	F	W
#5	16	F	B
#6	6	F	B
#7	13	F	W
#8	3	F	W
#9	10	F	W
#10	6	F	W
#11	7	F	W
#12	1	F	W
#13	12	F	W
#14	13	F	B
#15	23	F	W

Action Research Cycles: Plan-Do-Study-Act

The model for improvement provides a framework for developing, testing and implementing changes leading to improvement. PDSA cycles, which have four stages, are intended to drive improvement. Educators can use PDSAs to learn fast, fail fast, and improve quickly (Bryk et al., 2015). While PDSA cycles are an iterative design strategy traditionally used to support sustained improvement efforts across a range of fields, from manufacturing to healthcare (Berwick, 2003; Bryk et al., 2011; Langley et al., 2009), they are a useful tool for supporting situated and "integrated problem-solving research" (Bransford et al., 1999).

In this study, the scholarly practitioner attempted to understand the effects of research-based interventions on K-2 literacy and teachers' perceptions of those interventions being implemented. The implementation of the PDSA model, in three cycles, was used by the scholarly practitioner to gather the data described herein.

Results

Action Research Cycle 1

The first action research cycle gathered and analyzed Creekside's student mClass data from the 2018-2019 school year. The purpose of this data collection was to establish a baseline to compare K-2 student literacy gains from the 2018-2019 school year to the 2019-2020 school year. The initial data collected consisted of K-2 students who were in Tier 2 and receiving targeted, research-based interventions in reading. The data collected for kindergarten students came from the mClass platform and represented first sound fluency, or FSF, phoneme segmentation fluency, or PSF, Letter Naming Fluency, or LNF, and non-sense word fluency, or NWF. The data collected for first grade students also came from the mClass platform and represented first sound fluency, or FSF, phoneme segmentation fluency, or PSF, non-sense word

fluency, or NWF, DIEBLS Oral Reading Fluency, or DORF, and text reading comprehension, or TRC. The final collection of data for second grade students came from the mClass platform and represented non-sense word fluency, DIEBLS Oral Reading Fluency, and text reading comprehension. Based on the results of the mClass assessment, students are considered as either well below expectations (red), below expectations (yellow), or meeting expectations (green) for each of the areas assessed. The data, based on student performance, was analyzed and utilized by K-2 classroom teachers to assist in collecting and implementing research-based interventions for all students who fell under the Tier 2 umbrella.

Table 4 shows a summary of Tier 2 kindergarten students who received research-based interventions at Creekside Elementary during the 2018-2019 school year. The universal screening data, collected by teachers, was used to help teachers determine how students were performing on specified skills. Those skills, according to the mClass platform, were age-appropriate skills that the children must have developed in order to become proficient readers. Creekside teachers gathered student data by administering the TRC and specific DIBELS assessments. The benchmark assessments were administered individually and the mClass program calculated student scores and levels of proficiency based on the data collected.

The data in Table 4 represents the number of kindergarten students who showed deficits in skills in which they need to become proficient in to become successful readers. The data collected from the mClass platform was tracked during a four-month period through a process called progress monitoring. In kindergarten, teachers focused on student's ability to recognize and name capital and lowercase letters, their ability to isolate and pronounce the first sound in spoken words, their ability to separate words into their sequence of individual sounds, and their ability to identify complete letter sounds (CLS) and blend letter sounds in whole words read. The

Table 4

Number of Tier 2 Kindergarten Students Who Received Research-Based Interventions at Creekside Elementary During the 2018-2019 School Year

	Universal Screening Data			
Date	Letter Sound Fluency	First Sound Fluency	Phoneme Sound Fluency	Non-Sense Word Fluency
12/10/18	13	5	5	0
2/4/19	9	9	0	0
3/4/19	5	3	4	0
4/1/19	1	3	5	2

data in Table 4 shows that as the year progressed those kindergarten students in tier 2 were able to make gains in letter recognition, first sound fluency, and were able separate and recognize sounds in whole words. The scholarly practitioner noted in December 2018 a total of twenty-three students were receiving interventions due to deficiencies in early reading skills, and a little less than two months later 18 students were receiving interventions. As teachers continued to implement research-based interventions, the data showed that the students continued to grow academically. In just under four months, twelve students were receiving interventions due to deficiencies in early reading skills compared to the twenty-three students that were receiving the same interventions in December.

Table 5 provides a summary of Tier 2 first grade students who received research-based interventions at Creekside Elementary during the 2018-2019 school year. Again, student data, collected by teachers, was used to help teachers determine how students were performing on specific skills. Those skills, collected during benchmark assessments, were the skills which teachers focused on when implementing research-based interventions.

The data in Table 5 signifies the number of first grade students who displayed deficits in skills in which they needed to become proficient readers. The data again collected from the mClass platform was tracked during a five-month period through progress monitoring. The teachers in first grade at Creekside Elementary focused on their student's ability to recognize and name capital and lowercase letters, ability to isolate and pronounce the first sound in spoken words, their ability to separate words into their sequence of individual sounds, ability to identify complete letter sounds (CLS) and blend letter sounds in whole words read, and their students ability to read fluently with accuracy and text understanding. The data in Table 5 showed that as the year progressed Creekside's first grade students who were in tier 2 were able to make gains

Table 5

Number of Tier 2 First Grade Students Who Received Research-Based Interventions at Creekside Elementary During the 2018-2019 School Year

	Universal Screening Data						
Date	Letter Sound Fluency	First Sound Fluency	Phoneme Sound Fluency	Non-Sense Word Fluency	DORF	TRC Accuracy	TRC Comprehension
12/10/18	1	1	9	21	2	5	0
2/4/19	1	0	3	19	7	0	4
3/4/19	1	0	1	17	10	1	1
4/1/19	1	0	0	9	13	1	1
5/6/19	0	0	0	6	12	0	1

in all the skills in which they ere originally assessed on. The scholarly practitioner noted in December 2018 a total of 39 students were receiving interventions due to deficiencies in early reading skills, a little less than three months later thirty-two students were receiving interventions. As teachers continued to attend problem-solving meetings and implement research-based interventions, the first-grade students at Creekside Elementary continued to grow. In just under five months, nineteen students were receiving interventions due to deficiencies in early reading skills compared to the thirty-nine students that were receiving the same interventions in December.

Table 6 shows a summary of Tier 2 second grade students who received research-based interventions at Creekside Elementary during the 2018-2019 school year. Like the assessments that were given to Creekside's kindergarten and first grade students, the students in second grade were required to complete benchmark assessments in order to collect data that was used to determine which skills students needed to be remediated on in order to become better readers.

The data in Table 6 shows the number of second grade students who struggled in basic reading skills needed to become proficient readers. mClass data was tracked during a five-month period through progress monitoring. Teachers in second grade at Creekside Elementary focused on their student's ability to identify complete letter sounds (CLS) and blend letter sounds in whole words read, and their students' ability to read fluently with accuracy and text understanding. The data in Table 6 showed that as the year progressed Creekside's second grade students who were in tier 2 also made gains in all the skills in which they were originally assessed on and struggled on. The scholarly practitioner noted in December 2018 a total of 27 students were receiving interventions due to deficiencies in early reading skills, a little less than three months later fourteen students were receiving interventions. As the year

Table 6

Number of Tier 2 Second Grade Students Who Received Research-Based Interventions at Creekside Elementary During the 2018-2019 School Year

	Universal Screening Data			
Date	Non-Sense Word Fluency	DORF Accuracy and Fluency	DORF Retell and Fluency	TRC Comprehension
12/10/18	12	0	9	6
2/4/19	1	3	7	5
3/4/19	0	2	9	3
4/1/19	0	0	8	2
5/6/19	0	0	4	0

progressed and teachers continued to implement research-based interventions, only four second grade students were receiving interventions due to deficiencies in early reading skills compared to the 27 students that were receiving the same interventions in December.

During the initial Action Research Cycle, the scholarly practitioner also administered a thirteen-question survey, via Qualtrics, to gain a better understanding of teachers' interpretation and beliefs of research-based interventions within the MTSS framework at Creekside Elementary. To test the validity of the survey being administered to K-2 teachers, the scholarly practitioner piloted the survey with thirteen third through fifth grade teachers at Creekside Elementary. When debriefing with the participants of the pilot study, the scholarly practitioner read aloud the individual questions to check understanding, check wording and language, and to allow clarifying questions to be asked. The piloted survey did not yield any concerns; therefore, the scholarly practitioner administered the survey in its original form to the fifteen kindergarten through second grade teacher participants. Items were rated on a 6-point Likert-type scale with strongly agree, agree, somewhat agree, somewhat disagree, disagree, and strongly disagree as choices. The survey instrument included the informed consent to participate so that all participants were aware of the study, its purpose, and that participation was voluntary.

The data in Table 7 represents the gains which were made by Creekside's problem-solving team based on the understanding and implementation of MTSS. The data also signifies the next steps which will need to be taken by the scholarly practitioner to continue the overall understanding of MTSS and the implementation of research-based strategies at Creekside Elementary School.

Question #2 confirmed that the teachers at Creekside felt that they were adequately trained on the six components of MTSS more so during the 2019-2020 school year over the

Table 7

Responses by Survey Participants for Likert-Type Items

Question	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
I know the SIX domains of the MTSS Framework						
’18-‘19	7%	29%	43%	14%	7%	0%
’19-‘20	29%	43%	21%	7%	0%	0%
Percentage Change	+22%	+26%	-22%	-7%	+7%	0%
I have been adequately trained on the SIX components of MTSS						
’18-‘19	0%	36%	21%	36%	0%	7%
’19-‘20	57%	36%	0%	7%	0%	0%
Percentage Change	+57%	0%	21%	+29%	N/A	+7%
I believe that my school is implementing the six components of MTSS effectively						
’18-‘19	7%	57%	36%	0%	0%	0%
’19-‘20	36%	57%	7%	0%	0%	0%
Percentage Change	+29%	0%	-29%	0%	0%	0%

Table 7 (continued)

Question	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
Leadership takes the time to review MTSS updates at least once a month						
’18-‘19	43%	36%	14%	7%	0%	0%
’19-‘20	43%	36%	21%	0%	0%	0%
Percentage Change	0%	0%	+7%	-7%	0%	0%
I understand the three tiers in the Problem-Solving Framework						
’18-‘19	50%	43%	7%	0%	0%	0%
’19-‘20	79%	21%	0%	0%	0%	0%
Percentage Change	+29%	-22%	-7%	0%	0%	0%
Our school has a well-established Problem-Solving Team that is composed of experienced teachers in various grade-levels						
’18-‘19	29%	43%	7%	7%	14%	0%
’19-‘20	43%	36%	21%	0%	0%	0%
Percentage Change	+14%	-7%	+14%	-7%	-14%	0%

Table 7 (continued)

Question	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
Our school has an effective data collection process in place that allows me to effectively analyze my data in a timely manner						
’18-‘19	43%	21%	21%	14%	0%	0%
’19-‘20	43%	21%	14%	21%	0%	0%
Percentage Change	0%	0%	-7%	+7%	0%	0%
I feel well prepared to analyze my student’s data						
’18-‘19	29%	50%	21%	0%	0%	0%
’19-‘20	50%	21%	29%	0%	0%	0%
Percentage Change	+21%	-29%	+8%	0%	0%	0%
I feel well prepared to lead data-based decision making regarding my student’s academics						
’18-‘19	29%	50%	21%	0%	0%	0%
’19-‘20	50%	50%	0%	0%	0%	0%
Percentage Change	+21%	NA	-21%	0%	0%	0%

Table 7 (continued)

Question	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
As a teacher, I am able to effectively implement research-based strategies for our struggling students						
’18-‘19	14%	64%	7%	7%	7%	0%
’19-‘20	28%	64%	7%	0%	0%	0%
Percentage Change	+14%	0%	0%	-7%	-7%	0%
I feel well prepared to progress monitor my students						
’18-‘19	29%	50%	21%	0%	0%	0%
’19-‘20	50%	50%	0%	0%	0%	0%
Percentage Change	+21%	0%	-21%	0%	0%	0%
I believe the MTSS framework is important to improving student outcomes						
’18-‘19	36%	50%	14%	0%	0%	0%
’19-‘20	43%	50%	7%	0%	0%	0%
Percentage Change	+7%	0%	-7%	0%	0%	0%

Table 7 (continued)

Question	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
In 2019-2020, following the MTSS framework was beneficial in improving student literacy scores in grades K-2						
’18-‘19	14%	50%	36%	0%	0%	0%
’19-‘20	+36%	50%	-14%	0%	0%	0%
Percentage Change						

2018-2019 school year. Whereas, question #3 supports that teachers during the 2019-2020 school year felt that Creekside Elementary was effectively implementing the six components of MTSS.

Question #5 showed 100% of the participants in this study during the 2018-2019 and 2019-2020 school year understood the three tiers of the Problem-Solving Framework. However, question #7 showed 79% of the participants in this study during the 2019-2020 school year felt that Creekside Elementary had a well-established problem-solving team whereas 86% of the same participants felt that Creekside Elementary had a well-established problem-solving team during the 2018-2019 school year.

One hundred percent of the K-2 teachers at Creekside Elementary School during the 2018-2019 school year believed that the MTSS framework was important to improving student outcomes while 100% of those same teachers felt that they were able to effectively implement research-based strategies for their struggling students which was a 14% improvement from the 2018-2019 school year.

Based on the data collected during the 2018-2019 school year, the scholarly practitioner understood that formalized training had to take place regarding the MTSS framework and the six components associated within that framework. The scholarly practitioner also noted that time had to be dedicated at Creekside's monthly staff meetings to review the MTSS framework and to examine the data collection processes being used throughout the K-2

Action Research Cycle 2

The purpose of the second Action Research cycle was to utilize the K-2 teachers' feedback and opinions from the survey administered in Action Research Cycle 1 to assist the scholarly practitioner in refining the focus group questions relevant to the MTSS framework and the implementation of research-based interventions. Once focus group questions were finalized,

the scholarly practitioner met with two separate focus groups. Prior to the focus group interviews, the scholarly practitioner welcomed the participants, gave a synopsis of the focus group's purpose, and received written permission from those participating in the focus group to be audio recorded. The focus group took place after school in Creekside's Data Room during the month of December 2019. The first focus group consisted of eight K-2 Creekside Elementary teachers while the second focus group consisted of seven K-2 Creekside teachers.

Once the focus groups concluded, the scholarly practitioner ensured the quality of the recording and transcriptions to ensure accurate data collection and analysis. Qualitative data from the focus group questions/discussions was recorded and transcribed by the scholarly practitioner. The scholarly practitioner coded the data, analyzed for patterns and ultimately themes based off the answers given by the teacher participants.

The educators' responses provided support for two major themes, which conveyed the challenges faced in classrooms throughout Creekside. The themes noted by the scholarly practitioner were teacher frustration and lack of understanding pertaining to the overall intervention process and implementation.

Teacher Frustration

The first theme resulting from the analysis of the teacher focus groups was one of frustration with the number of students needing interventions. Due to the high number of students in Tier 2 and 3, teachers voiced that there was not enough time throughout the school day to meet the content standards while remediating students who are working below grade level.

Participant #1 expressed a desire to work collaboratively to be more efficient:

Teachers need to work together and provide interventions in small groups across the

> entire grade level and not just the HR teacher providing interventions to their students. I want my students to grow; however, time is an issue when I need to focus on 20 students and offer interventions to six of them.

Similarly, participant #2 concurred regarding needing more assistance saying:

> We need an interventionist-a person whose whole job is to complete Tier 2 and 3 interventions with fidelity, track data, present to team, attend all meetings. I am not complaining because I want to do what is needed but I have a difficult time sticking to the schedule due to so many demands.

Participants #3 had concerns regarding time constraints due to the everyday demands of being a classroom teacher:

> I do not have time to do interventions and record the data every day. Things come up. We need to look into having a person to do all Tier 3 interventions rather than relying on classroom teachers. Possibly an interventionist.

Participant #4 echoed concerns about time constraints, the need for extra assistance in the classroom, and the potential benefit of having an interventionist in the classroom:

> Having time in the day to teach and reinforce the needs of the targeted intervention to the individuals. We are already lacking the time so again professional assistance to meet with those students to provide additional help. They meet with the extra teacher and then we provide the double dose of the intervention when we pull small groups.

Participant #5 discussed the importance of effective scheduling and making sure students are not missing the core content they are struggling in by saying:

> A few years ago, we did interventions when we had time, or someone would pull the student. We need to look at teachers' and students' schedules to make sure, students are not missing core instruction needed to learn skills, in the subject area that proves difficult.

Based on the participants' responses the scholarly practitioner noted that teachers were frustrated with the lack of time provided to implement the interventions to fidelity. The frustrations were based off the difficulty the participants were having trying to meet Pitt County's instructional time guidelines on top of the day to day requirements and routine activities of being a classroom teacher such as encore, recess, lunch, snack, and bathroom breaks.

Lack of Teacher Understanding

In 2010, a survey of school administrators revealed that 61% were implementing some form of an academic intervention model, however misunderstandings regarding the purpose and structure of the process remained a topic of discussion (Barnett et al., 2004; Berkeley et al., 2009; Fuchs & Fuchs, 2006; Hoover, 2011; Mastropieri & Scruggs, 2005; Shinn, 2007). A study conducted by Hughes and Dexter (2011) defined the major components of intervention models, as well as best practices for implementation of those interventions. The components described in their study included: scientifically based core curriculum; universal screening; progress monitoring; and decisions about adequate progress throughout the intervention tiers.

A problem-solving model designs individualized interventions to address specific learner needs (Johnson et al., 2006). Training of staff in effective implementation is easier when a standardized model is in place (Stecker et al., 2008). From a universal perspective, standard-protocols reduce potential discrepancies within intervention models allowing a consistent schoolwide practice to be established and implemented (Barnes & Harlacher, 2008).

The second theme found by the scholarly practitioner showed that K-2 teachers at

Creekside Elementary felt they needed a formal plan in place to properly implement the research-based interventions. The same educators felt they often walked away from problem-solving meetings with a lack of clarity, little direction, and often frustrated.

Participant #6 expressed a desire to have more clarity and understanding on how to address the needs of those students who are working well-below grade level. This teacher shared:

> As a whole, we need to have clearer procedures in place for students who are FAR below grade level. For example, teachers need to understand what research-based strategies are and how to find strategies that will coincide with the student's needs.

Participant #2 spoke up and shared some concerns regarding lack of training and the desire for some more concrete examples when implementing the interventions. Participant #2 stated, "Hands ON Training. Having that PST individual/s model and co-instruct in the classroom to target those "at risk" students to better help them. Using practices that target the area of concern whether it's academic or behavioral".

> Participant #7 was concerned with the lack of consistency with the interventions being implemented as well as the need for extra assistance in the classroom.
>
> We are using research-based strategies, but I feel there is little consistency. I feel having effective assistance in the classroom to help target those learning needs of the individuals would help with effective data collection. As a lead teacher in the classroom and the amount of differentiating we already do on a daily basis, in order to close gaps, we need additional help providing beneficial interventions.

In closing, participant #8 shared the importance of making data-driven decisions and how unsupported decisions can academically hurt a child.

> I think there should be clear indicators that place a child in Tier II for each grade level.

> For example, if a child is not at this point at this time of the year, they need an intervention. There are a lot of decisions being made without hard data to guide the decision or students missing out on interventions because the teacher thinks they may end up being on grade level by the end of the year and then when the end of the year comes, they aren't and an entire year is lost.

Based on the participant's responses the scholarly practitioner noted that improvements needed to be made within Creekside's problem-solving team to help ease the participants' concerns regarding lack of understanding and clarity on how to effectively implement the interventions.

Once the focus groups concluded and the data was appropriately coded and analyzed, the scholarly practitioner met with the participants of this study to check and review the responses collected and themes developed. Based on the themes noted and the responses collected the scholarly practitioner tied the themes found in the focus groups to help determine the next steps moving forward.

Action Steps

The scholarly practitioner along with the participants of this study as well as Creekside's Instructional Coach, Assistant Principal, Problem-Solving Chair, and School Counselor met to discuss how the participants' needs and concerns regarding the implementation of research-based strategies can better be addressed. At the end of the December 2019 meeting, a detailed intervention plan which included a schoolwide schedule was created. That schedule allowed time for interventions to be implemented and included time for teachers to attend problem-solving team meetings, as needed. The intervention plan also included schoolwide forms that were used to collect student data. The forms used to collect data were color-coded, listed the targeted skill,

the intervention being implemented, as well as baseline data, the student's measurable, targeted goal, and finally progress monitoring data. The intervention plan also required the problem-solving team to provide, written details on how the participants were to use a specific intervention platform, Istation, to determine students' areas of concern and interventions.

Action Research Cycle 3

The purpose of the third and final Action Research Cycle was to carry out the improvement strategies developed in Action Research Cycle 2. A schoolwide schedule was implemented which provided K-2 classroom teachers with a 25-minute intervention block. This block allowed K-2 teachers time to focus on effectively implementing the research-based strategies provided to them by Creekside's problem-solving team. Throughout Cycle 3, K-2 teachers participated in scheduled problem-solving team meetings. These meetings required the team to discuss specific student deficiencies which were determined by Istation's ISIP and ORF reports. Based on these reports and Istation's recommendations, the team provided classroom teachers specific recommendations on how the research-based interventions chosen were to be implemented in the classroom.

During Action Research Cycle 3, the progress monitoring data collected for kindergarten students came from the Istation platform and represented listening comprehension, letter knowledge, and phonemic awareness. The data collected for first and second grade students came from the Istation platform and represented letter knowledge, phonemic awareness, alphabetic decoding, comprehension, vocabulary, and spelling. Based on the results of Istation's assessment and progress monitoring tool, students were categorized as either working below grade level/showing difficulty (red), below expectations (yellow), or meeting expectations (green) for each of the areas assessed. Data was collected and analyzed from October 2019 to

March 2019, based on student performance, to help determine the effectiveness of the research-based interventions being implemented at Creekside Elementary during the abbreviated 2019-2020 school year. Istation, selected by the North Carolina Department of Public Instruction to support the Read to Achieve (RtA) diagnostic during the 2019-2020 school year, was used by teachers at Creekside Elementary to gain a better understanding of their students' reading performance abilities.

Table 8 shows a summary of Tier 2 kindergarten students, based in Istation data, who received research-based interventions at Creekside Elementary during the 2019-2020 school year. The data collected was used to determine which skills students needed to be remediated on to become better readers. Teachers in kindergarten at Creekside Elementary were required to assess their student's knowledge in listening comprehension, phonemic awareness, alphabetic knowledge and skills, and vocabulary through various subtests. In the listening comprehension subtest, students were assessed on their ability to listen and understand grade-level sentences and paragraphs by matching pictures to make meaning of what they have heard read aloud to them. The phonemic awareness subtest was comprised of two types of items: beginning, ending and rhyming sounds and phonemic blending. Beginning sound assessed the student's ability to recognize the initial, final or rhyming sound in an orally presented word. Phonemic Blending assessed a student's ability to blend up to six phonemes into a word. The final subtest assessed students letter knowledge by assessing whether students knew the names and sounds represented by the letters of the alphabet. Letter knowledge was comprised of two types of items: recognition of letter names and recognition of letter-sound correspondences. The data in Table 8 showed that as the year progressed Creekside's kindergarten students who were in tier 2 made gains from October to January in listening comprehension as well as letter knowledge. The scholarly

Table 8

Number of Tier 2 Kindergarten Students Who Received Research-Based Interventions at Creekside Elementary During the Abbreviated 2019-2020 School Year

	Universal Screening Data		
Date	Listening Comprehension	Letter Knowledge	Phonemic Awareness
10/7/19	22	8	0
11/13/19	24	7	1
12/16/19	17	5	2
1/31/20	14	6	3

practitioner noted in October 2019 a total of 22 students were receiving interventions due to deficiencies in listening comprehension, a little more than four months later fourteen students were receiving interventions.

Table 9 shows comparison data of Creekside kindergarten students who progressed through Tiers 2 and 3 at Creekside Elementary during the 2018-2019 and 2019-2020 School Year. Creekside's Tier 2 kindergarten students made 28 skill-based gains while 11 students remained in Tier 2, 10 students were referred to Tier 3, and three students exited Tier 2 during 2018-2019 school year. During the 2019-2020 school year, Creekside's Tier 2 kindergarten students made 16 skill-based gains while 23 students remained in Tier 2, 10 students were referred to Tier 3, and 4 students exited Tier 2. After reviewing and analyzing the data from Table 8, the scholarly practitioner did not find an improvement in academic gains regarding the implementation of research-based interventions between the 2018-2019 and 2019-2020 school year. For example, 13% of Creekside's Tier 2 students no longer needed research-based interventions after making academic gains during the 2018-2019 and the 2019-2020 school year. In other words, the same percentage of students during the 2018-2019 school year and 2019-2020 school year made academic gains. However, Tier 2 students during the 2018-2019 school year made more gains on the skill-based assessments as those Tier 2 students during the 2019-2020 school year.

Table 10 shows a summary of Tier 2 first grade students who received research-based interventions based on Istation data at Creekside Elementary during the 2019-2020 school year. The data, like the data collected by Creekside's kindergarten teachers but more in depth, alerted teachers to children in need of instructional support and helped the problem-solving team provide instructional decisions to classroom teachers. Teachers in first grade at Creekside

Table 9

Comparison Progression of Kindergarten Students through Tiers 2 and 3 at Creekside Elementary During the 2018-2019 and 2019-2020 School Year

Cycles of Research-Based Interventions	Total Number of Students in Tier 2		Total Number of Students Referred to Tier 3		Total Number of Students Exited from Tier 2	
	‘18-‘19	’19-‘20	‘18-‘19	‘19-‘20	‘18- ‘19	‘19-‘20
1	23	30	5	0	1	2
2	18	32	4	6	2	1
3	12	24	1	4	0	0
4	11	23	0	0	0	1

Table 10

Number of Tier 2 First Grade Students Who Received Research-Based Interventions at Creekside Elementary During the Abbreviated 2019-2020 School Year

	Universal Screening Data					
Date	Letter Knowledge	Phonemic Awareness	Alphabetic Decoding	Comprehension	Vocabulary	Spelling
10/7/19	27	9	10	0	0	0
11/13/19	0	29	12	3	2	1
12/16/19	0	18	13	2	2	0
1/31/20	0	2	10	6	5	2

Elementary were required to assess their student's knowledge in letter knowledge, phonemic awareness, alphabetic decoding, comprehension, vocabulary, and spelling. Students' letter knowledge was assessed by whether students knew the names and sounds represented by the letters of the alphabet. Letter knowledge was comprised of two types of items: recognition of letter names and recognition of letter-sound correspondences. The phonemic awareness subtest was comprised of two types of items: beginning, ending and rhyming sounds and phonemic blending. Beginning sound assessed the student's ability to recognize the initial, final or rhyming sound in an orally presented word. Phonemic Blending assessed a student's ability to blend up to six phonemes into a word. The alphabetic decoding subtest measured the student's ability to blend letters into nonsense words in which letters represent their most common sounds. In the comprehension subtest, students were assessed on their ability to read and understand grade-level sentences and paragraphs. The vocabulary subtest is designed to test a child's knowledge of "tier 2" vocabulary words, meaning words that are frequently encountered in text but are not typically used in daily conversation (Beck et al., 2002). The last subtest, which was spelling, assessed the students' spelling abilities. The data in Table 10 showed that as the year progressed Creekside's first grade students who were in tier 2 made great gains from October to November in letter knowledge. More specifically, in October 2019 27 first grade students needed interventions in place to assist them with letter knowledge. By the end of November 2019, all twenty-seven of those first-grade students mastered their letter knowledge. From November 2019 to January 2020 the data in Table 9 shows first grade students at Creekside Elementary gradually made gains in each domain which signifies the research-based intervention being out in place and implemented were working.

Table 11 shows comparison data of Creekside's first grade students who progressed through Tiers 2 and 3 during the 2018-2019 and 2019-2020 school year. During the 2018-2019 school year, in total, Creekside's Tier 2 first grade students made 44 skill-based gains while 19 students remained in Tier 2, 12 students were referred to Tier 3, and five students exited Tier 2 going back down to Tier 1. During the 2019-2020 school year, Creekside's Tier 2 first grade students made 97 skill-based gains while 25 students remained in Tier 2, 18 students were referred to Tier 3, and 13 students exited Tier 2 going back down to Tier 1. After reviewing and analyzing the data from Table 9, the scholarly practitioner noted that those students receiving research-based interventions during the 2019-2020 school year showed more growth on the skill based assessments and more students exited Tier 2 than those students receiving research-based interventions during the 2018-2019 school year. More specifically, 28% of students exited Tier 2 during the 2019-2020 school year compared to 13% of students exiting Tier 2 during the 2018-2019 school year.

Table 12 shows a summary of Tier 2 second grade students who received research-based interventions at Creekside Elementary during the 2019-2020 school year. Creekside's problem-solving team used the data collected through Istation's ISIP and progress monitoring to determine which skills students struggled with and how those skills would be addressed through research-based interventions. The same Istation subtests which were given to Creekside's first grade students were given to Creekside's second grade Tier 2 students. The data in Table 12 shows that Creekside's second grade students made a total of 41 skill-based gains when research-based interventions were implemented with those biggest gains being in the comprehension domain. That same data shows that the students in second grade began to master

Table 11

Comparison Progression of First Grade Students through Tiers 2 and 3 at Creekside Elementary During the 2018-2019 and 2019-2020 School Year

Cycles of Research-Based Interventions	Total Number of Students in Tier 2		Total Number of Students Referred to Tier 3		Total Number of Students Exited from Tier 2	
	‘18-‘19	’19-‘20	‘18-‘19	‘19-‘20	‘18- ‘19	‘19-‘20
1	39	46	6	0	2	1
2	34	41	2	9	1	3
3	31	35	4	7	2	2
4	25	25	0	2	0	7
5	19	NA	0	NA	0	NA

Table 12

Tier 2 Second Grade Students Who Received Research-Based Interventions at Creekside Elementary During the Abbreviated 2019-2020 School Year

	Universal Screening Data					
Date	Letter Knowledge	Phonemic Awareness	Alphabetic Decoding	Comprehension	Vocabulary	Spelling
10/7/19	10	4	0	9	1	0
11/13/19	6	10	1	2	1	0
12/16/19	3	2	6	2	3	0
1/31/20	3	0	4	3	2	1

the basic skills of reading such as letter knowledge, phonemic awareness, and alphabetic decoding which in turn was helping them comprehend what they were reading.

Table 13 shows comparison data of Creekside's second grade students who progressed through Tiers 2 and 3 during the 2018-2019 and 2019-2020 school year. During the 2018-2019 school year, in total, Creekside's Tier 2 second grade students made 25 skill-based gains while four students remained in Tier 2, 6 students were referred to Tier 3, and 11 students exited Tier 2 going back down to Tier 1. Throughout the 2019-2020 school year, Creekside's Tier 2 second grade students made 41 skill-based gains while 13 students remained in Tier 2, 4 students were referred to Tier 3, and 15 students exited Tier 2 going back down to Tier 1. After reviewing and analyzing the data from Table 13, the scholarly practitioner noted that those Tier 2 students receiving research-based interventions during the 2019-2020 school year once again showed more growth on the skill based assessments than those students receiving research-based interventions during the 2018-2019 school year. To break it down more, the scholarly practitioner noted 58% of students exited Tier 2 during the 2019-2020 school year compared to 41% of students exiting Tier 2 during the 2018-2019 school year. Furthermore, Tier 2 students during the 2019-2020 school year made more gains on the skill-based assessments as Tier 2 students during the 2018-2019 school year.

The purpose of the last phase within Action Research Cycle 3 was to again meet with Creekside's Kindergarten through 2nd grade teachers to collect feedback regarding their final opinions and feelings towards the research-based interventions they implemented throughout the 2019-2020 school year. Due to the COVID-19 pandemic the feedback collected, which was originally scheduled to be collected through focus group interviews during the month of June 2020, was collected anonymously through teacher surveys that were administered in August

Table 13

Comparison Progression of Second Grade Students through Tiers 2 and 3 at Creekside Elementary During the 2018-2019 and 2019-2020 School Year

Cycles of Research-Based Interventions	Total Number of Students in Tier 2		Total Number of Students Referred to Tier 3		Total Number of Students Exited from Tier 2	
	‘18-‘19	’19-‘20	‘18-‘19	‘19-‘20	‘18- ‘19	‘19-‘20
1	27	24	3	0	9	7
2	16	20	1	2	1	2
3	14	16	2	2	1	2
4	10	13	0	0	0	4
5	4	NA	0	NA	0	NA

2020. Before the electronic surveys were administered, the scholarly practitioner met with Creekside's K-2 participants, updated them on the progress of the study, informed each participant of their rights, and asked if there were any questions or concerns in which there were no questions or concerns noted.

Once surveys were administered and participants were given two-weeks to complete the surveys, the scholarly practitioner reviewed the responses, coded the data and analyzed for patterns and themes based off the answers given by the teacher participants. The educators' responses provided support that student gains were made, that the problem-solving team organization improved, the team as a whole worked more cohesively, and the problem-solving team was able to provide clear cut directions and procedures when offering support. Teacher responses also disclosed the improvements in progress monitoring, that the K-2 teachers and problem-solving team felt accountability had a positive impact, and the consistent, weekly, bi-weekly meetings and check-ins were helpful.

Participant #1 expressed excitement that the problem-solving team was able to work well together, took teachers' feelings and thoughts into account and that the meetings as a whole were effective. "Strengths - Efficient, Effective, Cohesive. The team worked well together, and it was obvious our voices were heard the first time around. I appreciate you all trying to clean up the entire process."

Participant # 2 discussed the benefits of looking at cohort and group data rather than individualized student data.

> I felt like some strengths were that we moved to looking at cohort groups as a whole rather than individual students in the Tier 2 part of the process. We became more efficient at looking at group trends & norms in regard to core (Tier 1) instruction and Tier 2. If an

entire group was not showing improvement, then we knew we needed to determine if this might be the wrong intervention or question if it was done with fidelity.

Participants #3 and #4 both shared that the problem-solving meetings were organized which led to clarity and understanding of expectations. Participant #4 also voiced their pleasure in the data tracking tools that were being used. “Our meetings were organized, and data was analyzed consistently in a timely manner. Clear cut directions and procedures.”

Participant 4 said:

> Organized. Felt good leaving the meeting with resources to use with my students. I liked that there was a date set for the next meeting. This helped keep me accountable for staying on top of the process and data. The document used to track the data was straight forward. Our IC was extremely helpful and willing to come help with interventions.

Participant #5 and Participant #6, like Participant #4, expressed gratitude in the data collection tools being used by the PST. “The data collection by the PST was on point. As mentioned earlier - the document was helpful, easy to access, and gave everything at a glance.”

> We have really improved how data is being reviewed in the last year with better spreadsheets and criteria to place students in the tier system or move them out based on their progress in Reading and Math. We are able to review student’s information faster and how it compares to other classes for small group instruction as well.

Participant #7 was pleased with the overall processes put into place. “Interventions and tier process were much more clear and consistent this year. I felt like there was improvements made!”

It should be known that concerns were still noted by the scholarly practitioner based off the final focus group survey. The concerns were consistent with the theme of teacher frustrations

due to the high number of students in Tier 2 and 3. In the last focus group survey, participants #5, #10, and #11 voiced that there was not enough time throughout the school day to meet the content standards while remediating students who are working below grade level. The scholarly practitioner noted these participants did not share similar concerns in the original focus group interview.

New concerns which were noted by the scholarly practitioner consisted of inconsistent implementation of interventions amongst teachers, disappointment that more students did not go through the tiers, more professional development is needed and disappointment in the lack of consistency when identifying specific progress monitoring platforms.

Participant #1 discussed the need for professional development to better strengthen the overall MTSS framework. "I think PD for conceptual learning in math for K-2 would be helpful. We know how to implement reading interventions, but math seems to take a seat to reading. Maybe PD for understanding the definition of a research-based strategy."

Participant #2 reminded the scholarly practitioner about the importance of progress monitoring and how the interventions being offered by the PST must be age appropriate.

> We need a better program for progress monitoring than i-Ready because the validity of the program is far from accurate. Also, the interventions that are being recommended may not be appropriate for some students if they are not able to complete tasks appropriately on an iPad.

Participant #3 expressed that Creekside's PST needs to focus more than just on academic interventions. "We focus on reading, then math, and last behavior needs. Interventions that take into account behavioral needs, need to be looked at; specific interventions to use for specific standards being addressed."

Participant #4 like Participant #1 discussed the need for professional development to help with implementing interventions to fidelity. “I feel like the PST has a strong understanding of research-based strategies to implement as interventions. If anything, some professional development may be needed in the "how" to structure a teacher's day to implement them with fidelity.”

Participant #5 had concerns with the speed of referring students to the Exceptional Children’s Program.

> This past year the team is working more cohesively and there are less contradictions when it comes to moving students into tiers and providing them with appropriate interventions to use in the classroom. We could work on getting better with testing tier 3 students quicker once they are ready.

Participant #6, Participant #7, Participant #8, and Participant #9 similar to Participant #2 had concerns with the assessment tool that was used to progress monitor students and the lack of consistency regarding those assessment tools. Particpant 6 said “I don’t think Istation always reflected the student’s level of mastery, however, the testing was always performed on every student and the broad testing ensured no student fell through the cracks.”

Participant 7 shared “we should consider going back to using mClass for our progress monitoring and for use during PLC meetings to discuss student progress or regression. Three years three programs to figure out. That doesn’t help with fidelity.”

Paticipant 8 said:

> Istation was a horrible tool to use to monitor, need a more valid measurement tool and more resources to use to provide interventions when you needed more. I know this is not

> the school's fault but there needs to be better consistency. We are now using three programs in three years.

While participant 9 shared:

> We need a better assessment tool (not that we could help that). I think that this worked so much better using mClass. We had so much more data and it was easier to find research-based strategies to help kids with the skill that they were struggling with.
>
> Creekside should consider using mClass again for k-2 students. This assessment would be given one on one to students by teachers. Kids want to do their best for teachers, not computer programs. I know this was not Creekside's decision, but we really need to address this.

Participant #10 like Participant #5 voiced concerns with the amount of time it takes the PST to move students though the different tiers.

> We need to have consistent interventions for students in Tier 2 and Tier 3 that are research based, and also make sure our timeline for moving students through the tier system is consistent. There should not be long wait times to review students' progress or lack thereof so there isn't a long wait time to have students tested.

Participant #11 expressed the difficulty of finding the time to implement interventions once the interventions became more individualized and intense.

> The hardest part of this is always finding the time to make sure that the students get their interventions. If there was a way to pull people to help with these it would be amazing because it was almost impossible to get Tier 3 interventions in and teach all of your regular content. I do think that the 30-minute intervention block totally helped with Tier 2 interventions.

Reviewing and analyzing the participants' feedback, the scholarly practitioner noted that teachers' perceptions at Creekside Elementary have shifted in support of the problem-solving team and the research-based interventions being implemented. The participants' positive remarks focused on the problem-solving team's organization skills, teamwork, and clarity. According to Funrey et al. (2005), the successful components of installing a structure to support students with various needs include (a) creating a culture of shared vision, (b) building a collaborative work structure, (c) enabling need-based teacher supports (e.g., professional learning), (d) using data to make decisions, and (e) reviewing and participating in policy changes in collaboration with local educational agencies. Teachers' responses also supported the changes made to improve progress monitoring and the fidelity of research-based interventions being implemented. The problem-solving team knew that the new structures being put in place had to be strategic and support both teacher needs and student needs. According to Fusch and Fusch (2006), progress should be examined often, at least monthly, but ideally weekly or biweekly. Problem-solving meetings at Creekside were scheduled monthly whereas interventions were being implemented weekly. The scholarly practitioner noted that although teachers' perceptions have shifted concerns were still present such as inconsistent implementation of interventions. At the end of the study, concerns existed within the problem-solving team because the fidelity of the interventions being implemented could ultimately affect whether or not students are able to close their achievement gap. Durlak and Dupre (2008) shared when programs executed with fidelity are associated to programs not implemented with fidelity, the difference in efficiency is profound. Those implemented with fidelity yield average effect sizes that are two to three times higher. Teachers at Creekside Elementary voiced frustration that more students did not go through the tiers, and again the lack of time to properly implement the interventions offered by the problem-solving

team. Furthermore, the teachers at Creekside Elementary voiced disappointment in the lack of consistency when identifying specific progress monitoring platforms.

Summary

This study sought to identify the effects of research-based interventions within K-2 literacy as well as teachers' thoughts and opinions regarding the implementation of those interventions. Chapter 4 displayed the results of the study which included the quantitative and qualitative data that emerged throughout the action research cycles as well as an analysis of that same data. The final chapter, Chapter 5, will summarize this study as well as elaborate on the results of the literature, address implications for the findings, and provide recommendations moving forward.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Studies show that the reading problems that negatively affect students' comprehension could include one or more of the following: inappropriate use of prior knowledge, lack of vocabulary, difficulty with reading fluency, limited knowledge of common text structures (Gersten et al., 2001; Graham & Bellert, 2005), difficulty making inferences (Hall & Barnes, 2017; Jiménez-Fernández, 2015; Sencibaugh, 2007), and unfamiliarity with the appropriate strategy needed to gain meaning from a text (Woolley, 2008). Failing to solve reading difficulties during students' early grades dramatically increases the likelihood that the reading difficulties will follow them into their adult years (Ford & Opitz, 2008; Samuelsson et al., 2004). Sloat et al. (2007) stated that the majority of students who do not master the skills of reading to learn by the end of third grade will never learn to read well, have more complications with the grade level content, need ongoing intense assistance, and perform less than their classmates in reading achievement and curricular knowledge.

Many schools throughout the United States offer interventions, however, not all of them have created a multi-tiered system of support. A multi-tiered system of interventions—also commonly called Response to Intervention—is designed to ensure all students learn at high levels (Mattos, 2016). RTI, which involves the implementation of research-based interventions, is not limited to one model; however there is a consensus regarding the four distinguishing core characteristics of RTI: (1) high quality, research-based instruction in general education; (2) continuous progress monitoring; (3) screening for academic and behavior problems; and (4) multiple tiers of progressively more intense instruction (Zirkel & Thomas, 2010).
"Creating this level of support cannot be done effectively by an individual teacher in his or her own classroom. Instead, it requires a schoolwide collective effort, utilizing the specialized

training and unique talents of each staff member" (Mattos, 2016, para. 17). Following the guidance and expertise of educators, as well as internationally recognized authors and practitioners, schools have the ability to transform their problem-solving teams. These problem-solving teams working collectively as a whole can help close the achievement gap of those students who year after year continue to work below grade level. This chapter serves to summarize the overall findings of this study, the conclusions that can be made from the study, and recommendations for future research and implications for practice.

Summary of the Findings

In this study, the scholarly practitioner sought to determine the effectiveness of research-based interventions on K-2 literacy within the Multi-Tiered System of Support framework at Creekside Elementary School in Pitt County, North Carolina. The scholarly practitioner also examined Creekside's teachers' perceptions of the research-based interventions being implemented as well as their overall perceptions of the MTSS framework.

The two central guiding questions the scholarly practitioner sought to answer in this study were:

1. What are the effects of implementing research-based interventions within the MTSS framework on student literacy in grades K-2?
2. How do teachers' perceptions of the MTSS framework change throughout the implementation of research-based interventions on student literacy in grades K-2?

Following Plan-Do-Study-Act cycles, the scholarly practitioner's first goal was to collect quantitative data to determine the effectiveness of research-based strategies being implemented at Creekside Elementary. Throughout each cycle, the teachers at Creekside Elementary were mindful of the interventions being utilized while implementing those interventions to fidelity to

yield positive student growth (Harn et al., 2013). The scholarly practitioner throughout the study understood the importance of proper training of staff to assist with implementation with fidelity and to attain quality and effective results (McKay, 2017).

The initial training of the MTSS framework took place at the start of the 2018-2019 school year and continued into the 2019-2020 school year. The first phase of training focused on the three tiers of the framework and the breakdown of those tiers. As K-2 teachers began implementing the research-based interventions, it was obvious that they were dedicated to their students and were working hard to meet the needs of their students. However, it was also apparent that a structured, strategic implementation plan needed to be created to assist teachers with the implementation process. Teachers were tired, unsure of the data collection procedures, and frustrated with the lack of support and overall understanding of what was being asked of them.

At the start of the 2019-2020 school, Creekside's problem-solving team began the creation of the strucuted implementation plan. The problem-solving team explained the six components of the MTSS framework to all staff members at Creekside Elementary and rolled out the implementation plan, which consisted of a school wide schedule, detailed intervention plans, and pre-created data sheets. An implementation slide presentation was shared with the staff at Creekside which explained each stakeholder's role, expectations, and a detailed explaination on how the plan benefited all stakeholders.

The second goal of this study was to determine how Creekside's teachers' perceptions of the MTSS framework changed throughout the implementation of research-based interventions. The qualitative data collected in this study, through focus groups, were coded and broken down into categories. Themes were developed and then analyzed by the scholarly practitioner to help

better understand the teachers' perceptions and how they may have changed throughout the study. Using these themes, the scholarly practitioner along with Creekside's problem-solving team, began to fully understand the teachers struggles and frustrations associated with the MTSS framework. These themes were used to clear up teacher misunderstandings and to improve the processes which were oringaly created by the problem-solving team. In other words, the scholarly practitioner and the problem-solving team used the qulaitiative data gained from the teacher surveys and focus groups to reflect on the current practices. They had to admit their initial flaws and mistakes and meet their teachers' needs. Gathering, studying, and understanding the qualitative and quantitative data throughout each action research cycle was needed in order to answer the two study questions that were posed by the scholarly practitioner (Leedy & Ormrod, 2001).

The objective of the first action research cycle was to collect, gather, and analyze Creekside's student data from the mClass platform to help establish a baseline in order to compare Creekside's K-2 literacy gains from the 2018-2019 school year to the 2019-2020 school year. The data collected was from those K-2 students who were in Tier 2 and were working below grade level. During the first action research cycle, the scholarly practitioner also aimed to get a sense of how teachers felt about the overall intervention process. The first action research cycle involved the collection of qualitative data and quantitative data. Based upon the results from the study, it is evident that academic gains were made in first grade as well as in second grade. However, that same results show a decrease in academic gains with Creekside's kindergarten students when comparing the 2018-2019 school year to the 2019-2020 school year.

The objective of the second research cycle was to use the qualitative data collected from the teacher survey administered in cycle 1 to develop focus questions that could guide the

scholarly practitioner in developing a more effective, detailed intervention plan. Those questions, asked to K-2 teachers, provided the scholarly practitioner with the information needed to develop a plan that included a schoolwide schedule, time for teachers to attend problem-solving team meetings, and schoolwide forms that were used to collect student data.

The objective of the third action research cycle was to use the tools and resources developed in cycle 2 to help determine the effectiveness of the implementation of research-based strategies. During this cycle, the problem-solving team focused on teacher concerns. The concerns centered on frustrations with the number of students needing interventions as well as the lack of time during the school day to implement the interventions. The problem-solving team used teacher input from cycle 2 to create and introduce a more structured system of implementation that supported teacher and student needs.

In general, the results of this study showed that although students may still struggle academically even when specific interventions are put in place, most students were able to make gains when their teacher was intentional with interventions. First and second-grade students who received research-based interventions during the 2019-2020 grew on the academic skills in which they struggled in. For example, 154 skill-based gains were made by first and second grade students during the 2019-2020 school year compared to 97 skill-based gains during the 2018-2019 school year. Additionally, 32 students exited Tier 2 in 2019-2020 compared to 13 students who exited Tier 2 during 2018-2019 school year. Academic gains, although slow at times, allowed students to master or become proficient in one area, so teachers could then move on and address skill deficits in another area. Throughout the study, it was important to ensure that progress monitoring was taking place on a consistent basis. Consistent progress monitoring allowed the teachers at Creekside Elementary to determine their student's current skill-based

performance which then allowed the Problem-Solving team to make data driven decisions. These decisions ultimately determined if students made the gains needed on specific literacy skills which then allowed them to move on to the next tiered skill. Over the two-year study, which was shortened due to the COVID-19 pandemic, a total of seven kindergarten students , 18 first grade students, and 26 second grade students exited the tier process. As such, 13% of Tier 2 kindergarten students no longer needed research-based interventions after making academic gains during the 2018-2019 and the 2019-2020 school year. Of first grade students, 28% exited Tier 2 during the 2019-2020 school year while 13% of students exited Tier 2 during the 2018-2019 school year. Finally, 58% of second grade students exited Tier 2 during the 2019-2020 school year while 41% of students exited Tier 2 during the 2018-2019 school year.

Teacher participants in this study appreciated the opportunity to have their voices heard not once but twice regarding how they felt the overall implementation of the research-based interventions were being handled. Educators' responses during both focus groups were positive for the most part and focused on the fact that Creekside's Problem-Solving Team organization, teamwork, and ability to clearly explain implementation procedures were a positive. Those same teachers were pleased with the improvements in progress monitoring and that consistent schedules and meetings were properly put into place. It is important to note that the scholarly practitioner did record participants' concerns at the end of this study such as displeasure that not all of the students' needs were met, a lack of time to implement the interventions, professional development needed to tighten up procedures and processes, and dissatisfaction with the progress monitoring tool being used. It was noted by the scholarly practitioner that teachers' perceptions of the MTSS framework changed throughout the implementation of research-based interventions on student literacy in grades K-2. At the start of the study, teacher's felt uncertain

and were frustrated with the MTSS framework and the implementation process of research-based interventions. By the end of the study, teachers felt they has a better understanding of the MTSS components and how to effectively implement student interventions.

Interpretation of the Findings

The purpose of this mixed methods action research study was to determine the effectiveness of research-based interventions within the Multi-Tiered System of Support framework while examining teachers' perceptions of those research-based interventions being implemented in K-2 classrooms at Creekside Elementary. According to the North Carolina Department of Public Instruction (2019b), Multi-Tiered System of Support, or MTSS, is a multi-tiered framework which promotes school improvement through engaging, research-based academic and behavioral practices. Examining the Multi-Tiered System of Support and the data collection methods which were being implemented at Creekside Elementary were required to better comprehend the strengths and weaknesses of the MTSS framework. Given this, there were two central guiding questions the scholarly practitioner attempted to answer in this study. The findings for each study question will be discussed in this section.

Study Question 1

The first study question asked what the effects were of implementing research-based interventions within the MTSS framework on student literacy in grades K-2. Tier 1 within the MTSS framework is where all students are receiving core instruction from their teacher. According to the North Carolina Department of Public Instruction (2019b), Tier 1 focuses on a strong curriculum and effective instructional practices that should serve an estimated 80 to 90% of the student population. If a student was not proficient with core instruction alone, students at Creekside Elementary were then moved to Tier 2 where they received small group instruction.

Instructional interventions were differentiated, scaffolded, and targeted based on the needs of individual students (North Carolina Department of Public Instruction, 2019b). If students were not successful in Tier 2 then they were moved to Tier 3 where they were able to get one-on-one support. Margolis (2012) noted that those students who were not responding to these intense interventions might result in an evaluation for special education.

Kindergarten

During the 2018-2019 school year, the kindergarten students in Tier 2 made 28 skill-based gains. In other words, kindergarten students mastered those concepts and skills which they were struggling in and then began working on the next tiered skill. During that same year, 11 students remained in Tier 2 which meant those students needed to continue with small group interventions. Ten students were referred to Tier 3 and received intensive one-on-one interventions while three students exited Tier 2 during 2018-2019 school year. Those students who exited Tier 2 showed significant gains on the skills which they were struggling in and no longer needed small group interventions.

In 2019-2020, the kindergarten students at Creekside Elementary decreased the number of skill-based gains made from 28 the year before to 16. In the same year, 23 students remained in Tier 2 and continued with small group interventions, 10 students were referred to Tier 3 due to insufficient gains, and four students exited Tier 2 meaning they were no longer struggling academically in the skills being assessed.

After analyzing the data from the 2018-2019 and the 2019-2020 school year, it was noted that Tier 2 students made academic gains on the skills which they were not proficient on. However, the data collected does not support that the changes made by Creekside's Problem-Solving Team during 2019-2020 school year attributed to drastic, positive academic gains.

Approximately 1 out of 10 of Tier 2 students at Creekside Elementary no longer needed research-based interventions after making academic gains during the 2018-2019 and the 2019-2020 school year. With that said, Tier 2 students during the 2018-2019 school year made more gains on the skill-based assessments as those Tier 2 students during the 2019-2020 school year while 10 students were referred to Tier 3 during the 2018-2019 and 2019-2020 school year.

First Grade

Creekside's Tier 2 students made 44 skill-based gains during the 2018-2019 school year while 19 students ended the year still in Tier 2. The 44 skill-based gains showed that the first-grade students were closing the gap in the skills which they originally struggled in. The 19 students who remained in Tier 2 were unable to make the gains anticipated by the Problem-Solving Team, however, gains were still being made which prevented these students from being moved to Tier 3. During that same school year, 12 students were referred to Tier 3 due to lack of progress and/or academic regression, and five students exited Tier 2 due to significant academic gains.

During the 2019-2020 school year, Creekside's Tier 2 students made a notable 97 skill-based gains meaning the interventions being implemented were working. That same year, 25 students ended the school year in Tier 2 while 18 students were referred to Tier 3 due to insufficient academic gains. Thirteen students exited Tier 2 going back down to Tier 1 again due to gains being made which closed the student's achievement gap.

A breakdown of this data shows that first-grade students who received research-based interventions during the 2019-2020 flourished in regard to closing the gap on the academic skills in which they struggled in. Although more students ended the school year in Tier 2 during the 2019-2020 school year over the 2018-2019 school year, a noteworthy 97 skill-based gains were

made last school year. Additionally, approximately 1 in 4 students exited Tier 2 during the 2019-2020 school year while approximately 1 in 7 students exited Tier 2 during the 2018-2019 school year.

Second Grade

In 2018-19, second-grade students in Tier 2 made 25 skill-based gains. Four students stayed in Tier 2 which meant the intervention was working for those students and that intervention stayed in place to help continue that student progress. Six students were referred for Tier 3 which meant they needed more intensive intervention while 11 students were able to go back to just receiving core instruction without additional support.

In 2019-2020, the second-grade students at Creekside Elementary showed an increase in skill-based gains from 25 the year before to 41. Thirteen students in second grade remained in Tier 2 for small group support, four were moved to Tier 3 for one-on-one support, and 14 students were exited back to core instruction.

Disaggregating the data, Tier 2 students during the 2019-2020 school year again showed tremendous gains on skills which they previously struggled on. During a shortened school year, Tier 2 students in 2019-2020 made 16 more skill-based gains than Tier 2 students during the 2018-2019 school year. Additionally, approximately, 6 out of 10 students exited Tier 2 during the 2019-2020 school year while 4 out of 10 students exited Tier 2 the year before.

Findings

Based on the data analysis and the practices implemented throughout the study, the scholarly practitioner found a positive relationship between the implementation of research-based interventions and the K-2 literacy gains at Creekside Elementary. To start, using baseline data to determine the students' reading deficits and instructional needs allowed teachers at

Creekside Elementary to form intervention groups based on their student's ability level and academic needs. Forming these instructional groups intentionally allowed students to get Tier 2 interventions more often and to fidelity. Collecting baseline data also allowed teachers to drill down to each student's lowest foundational skill and build upon each skill they mastered.

The scheduled problem-solving team meetings were beneficial because student data were at the forefront. At these meetings, the problem-solving team along with the classroom teacher implementing the interventions was able to sit down and collectively discuss each student's academic needs and progress towards specific literacy skills. At the conclusion of these meetings, classroom teachers had a better understanding of the interventions they were implementing, how often they were to implement those interventions, and how the student data was going to be collected and graphed.

Implementing research-based interventions and making changes to how the problem-solving team operated, helped students in grades K-2 at Creekside Elementary make academic gains and close their achievement gap. When looking specifically at the data from the 2018-2019 and 2019-2020 school year, a total of 251 skill-based gains were made. It is important to note that these gains were stalled due to a shortened 2019-2020 school year due to the COVID-19 pandemic. The effects of implementing research-based interventions within the MTSS framework on student literacy in grades K-2 were found to close the achievement gap for many students who struggled with the foundational literacy skills needed to become successful readers. In addition, the problem-solving team was able to identify those students who were not making the academic gains expected and refer them to the special education team.

In closing, during the 2018-2019 school year, a total of 13 K-2 students who were unsuccessful in Tier 3 were referred to the exceptional children's program at Creekside

Elementary. After extensive testing and evaluations, 11 of those 13 K-2 students qualified for special education services based on the criteria set forth by the State of North Carolina. This represented a hit rate of 85%. During the 2019-2020 school year, again, a total of 13 K-2 students who were unsuccessful in Tier 3 were referred to the exceptional children's program with nine of those students qualifying for special education services. This represented a hit rate of 69%. In total, 26 students were referred to the exceptional children's team over a two-year period with 20 of those students qualifying for exceptional children's services for a hit rate of 77%. The hit rate percentages potentially demonstrate the notion that the implementation of research-based interventions within the MTSS framework promote student academic gains. With that said, longitudinal research over time with more data collected would need to be conducted to help make a more full determination. Overall, the hit rates indicate that the tiered framework is beneficial because it allows one to determine which students are making gains when research-based interventions are implemented. Those students who are not making gains and stall in Tier 3 ultimately require more intensive interventions and may require services from special education teachers.

Study Question 2

The second study question asked how teachers' perceptions of the MTSS framework change throughout the implementation of research-based interventions on student literacy in grades K-2. As accountability has continued to increase throughout schools, many school systems have examined research and policies surrounding multi-tiered systems of support (MTSS), which are now found throughout state and local education agencies (Kovaleski & Black, 2010). In order to implement research-based interventions, a multitude of educational professionals such as teachers, interventionists, and administrators as well as various levels of

services, programs, assessments, decisions, and rules must be strategically in place (Hill et al., 2012). As the Problem-Solving Team at Creekside Elementary worked cohesively alongside kindergarten, first, and second grade teachers, the scholarly practitioner understood the importance of not only gathering the stakeholders' feedback but using that feedback to make strategic changes to benefit the participants and students at Creekside Elementary,

Using surveys and focus group interviews, the scholarly practitioner coded data, studied patterns and eventually recorded themes based off the answers given by the teacher participants. The teachers who participated in this study shared personal reflections and struggles which they encountered while following the MTSS framework and implementing interventions in their classroom to fidelity. Although there were variations in each subject's responses, there were several trends which the scholarly practitioner noted and used to help build a detailed Problem-Solving intervention plan. The barriers associated with the implementation of research-based interventions noted by the scholarly practitioner were teacher frustration and lack of understanding of MTSS.

The scholarly practitioner along with Creekside's Problem-Solving Team used the teachers' feedback and developed a plan to strategically assist teachers in the implementation of research-based interventions. The plan included a schoolwide schedule, dates and times for K-2 teachers to meet, forms for student data collection, and specific interventions or steps that were to be used to assist students in Tier 2. The set schedule allowed time for interventions to be implemented and blocked times for teachers to go to problem-solving team meetings, as needed. The schoolwide forms that were used to collect student data were color-coded, listed the targeted skill, the intervention being implemented, included student baseline data, the student's measurable, targeted goal, and required progress monitoring data. The intervention plan also

asked the problem-solving team to offer written specifics on how the teachers were to use a specific intervention platform, Istation, to determine students' areas of concern and interventions.

Once the intervention plan was implemented and used over a two-month span, the teachers at Creekside Elementary voiced that the organization within the Problem-Solving Team improved. It was noted that participants felt the team worked well together and the research-based interventions the problem-solving team offered were detailed and easy to follow. Teacher responses also revealed they felt there were improvements in progress monitoring and the consistency in meeting times were helpful. As documented, teachers felt gains were made and the overall Multi-Tiered System of Support was strengthened; however, concerns were still present. Those concerns stemmed from inconsistency of the interventions being implemented, frustration and disappointment that more students were not targeted, and a lack of professional development focusing on MTSS and the implementation of research-based strategies. The last concern noted was the participants' disappointment that the school's progress monitoring tool differed from 2018-2019, which focused on data from the mClass platform while data from 2019-2020 was collected via the Istation platform.

The data from the surveys and focus groups were extremely advantageous for the scholarly practitioner. For example, based on stakeholder feedback, it was apparent a plan to strategically implement interventions needed to be created. The implementation plan allowed for the creation of a school wide schedule which had time set aside for teachers to implement interventions. The protected intervention time assisted those individuals who struggled to find time throughout the day to implement the recommended research-based interventions. Individualized intervention plans were created which reminded all stakeholders of the targeted skills being used to intervene, which was important for those teachers who had several students

who needed various interventions. The same individualized intervention plans offered specific details on how the interventions were to be implemented. These detailed plans were helpful to those teachers who would question their own implementation process. School wide forms assisted teachers and the problem-solving team in data collection. For example, the data collection forms housed baseline data as well as progress monitoring data. These data collection forms were beneficial to all stakeholders because they housed student data in a centralized location

The surveys and focus groups conducted at Creekside Elementary School were beneficial because they allowed beginning and veteran teachers to have a voice. Veteran teachers were able to be transparent and share what they felt worked and what did not work over the years while beginning teachers were able to voice what support they needed to be successful when implementing interventions.

Teachers' perceptions of the MTSS framework changed throughout the implementation of research-based interventions on student literacy in grades K-2. More specifically, they evolved from uncertainty and frustrations regarding the MTSS framework and the implementation process of research-based interventions to a better understanding of the MTSS components and how to effectively implement student interventions.

Implications of the Findings for Practice

Based on survey data from action research cycle 1, the scholarly practitioner noted 64% of K-2 teachers at Creekside Elementary did not know the six components of the MTSS framework, while 21% of those same K-2 teachers lacked clarity on how research-based interventions should be implemented. The main discoveries from this mixed methods action research study have revealed several suggestions for educational practice which will support

districts as they implement the MTSS framework. First, several factors must be in place to ensure fidelity of implementation. Stakeholders must have a concrete understanding of the MTSS framework, its components, and the various tiers of instruction. It is important for teachers to know that each tier increases in frequency and duration of time as a student's understanding and comprehension of a skill decreases. Teachers must understand that the interventions being implemented are tailored to each student's needs. Finally, a substantial factor which impacts student performance is procedural fidelity. When teachers adhere to the implementation of the interventions and deliver the interventions accordingly and to fidelity, student outcomes increase. In order to assist with the implementation of research-based interventions and promote the vision of the framework, school leaders should be active participants and lead by example. For example, being present in problem-solving team meetings, being able to answer teacher questions, and being willing and able to provide and implement research-based interventions can assist with teacher buy-in and show the the importance of the overall framework.

Second, all stakeholders should be mindful of and understand that the MTSS framework is a model in which educators share accountability for all students they instruct. The MTSS framework states that all students are considered Tier I students. Administrators must ensure that all students in their building are receiving strong Tier I instruction that is differentiated. It is imperative that a schoolwide master schedule is created that allows teachers time to plan as a team and time to break down student data. That data is then to be used to drive instruction and create engaging Tier I lessons. According to Gibbons (2016), building an infrastructure for the successful implementation of research-based interventions is the utmost importance. Gibbons goes on to state building leaders must create schedules that support instruction, clear

implementation procedures must be put in place, and data-based decision making must drive instruction and interventions.

Once stakeholders have a basic understanding of the MTSS framework, it would be beneficial for school leaders to provide continuous professional development on effective Tier I instruction. According to the Nebraska Department of Education (2019), strong leadership, continuous professional development and learning as well as coaching help sustain systematic frameworks and increase a teacher's capacity to meet academic expectations and student learning needs. Based on teacher surveys, K-2 teachers at Creekside Elementary mentioned the need for professional development on four different occasions. Educators must work together to have a comprehensive understanding of the content they are teaching and how that content vertically aligns to those grade levels below and above them. Professional development should also address how the MTSS framework will be used within the school setting as well as the overall purpose and function of the Problem-Solving team. As professional development takes place, it would be imperative to build capacity amongst all stakeholders in order to build and sustain fidelity of implementation within the MTSS framework and Problem-Solving team. Educators should be surveyed throughout the school year to check for understanding and to configure future professional development sessions.

Finally, successful implementation of the MTSS framework and effective implementation of research-based interventions requires continuous communication and collaboration amongst all stakeholders. According to McCook (2006), the role of school leaders is the most critical aspect to the success of an MTSS framework. McCook continues by stating it is imperative for school leaders to be an active participant in all aspects of the framework, from start to finish. A schoolwide schedule should be implemented to allow for common planning. In addition,

problem-solving meetings should be scheduled and held on a consistent basis while a research-based progress monitoring tool is used regularly and to fidelity. It is imperative that a school administrator attends all problem-solving team meetings to help ensure conversations are meaningful, intentional, and that those interventions being implemented are monitored and implemented to fidelity.

Limitations

Throughout the duration of this study, there were several limitations that may have impacted the overall findings. First, successful implementation of research-based interventions required the collaboration of many stakeholders such as leadership, members of the problem-solving team, the classroom teacher, and even the students involved. When a member of this collective group was out, their absence may have ultimately affected the overall fidelity of the intervention being implemented. For example, when students were absent, they would miss the opportunity to receive the interventions designed for them. This in turn pushed back the progress monitoring timeline. If the team was unable to communicate and collaborate effectively, again, the fidelity of the intervention was impacted. For example, if stakeholders disagreed on a particular intervention or the intervention was implemented incorrectly, then the fidelity of that intervention is in question.

Second, the lack of time during the initial implementation phase may have impacted the fidelity of the study. For example, during the 2018-2019 school year, interventions were being implemented at the convenience of the teachers. In other words, interventions were being implemented when teachers found time in their already jammed-packed schedule. The lack of urgency and inability to add more time to the school day left some students potentially not getting their interventions according to the progress monitoring timeline set forth by Creekside's

Problem-Solving team. In total, 16 students, four kindergarten students, seven first grade students, and five second grade students were added to a wait list. These students were then scheduled to receive interventions once their peers exited the tier framework.

Third, professional development for those K-2 teachers involved in the study was an afterthought. Based on the data from teacher surveys and focus group interviews, there was a lack of understanding by several teachers in regard to how the overall framework functioned. There was uncertainty on how and when interventions were to be implemented as well as uncertainty on how data should be collected.

Fourth, throughout the study the scholarly practitioner had to use two different diagnostic platforms. Amplify's mClass and Istation were used to obtain student baseline data, collect and analyze data, and progress monitor students. These two different platforms caused confusion among all stakeholders and ultimately did not compare the same exact data points. The mClass platform, used at Creekside Elementary since 2013, measured students' reading skills using two main assessments: Dynamic Indicators of Basic Early Literacy Skills, or DIBELS, and the Text Reading Comprehension, or TRC. Istation, which was being used for the first time by Creekside teachers at the start of the 2019-2020 school year, used an instrument known as Istation's Indicators of Progress for Early Reading or ISIP to measure similar reading skills. ISIP was a game-like assessment controlled by the student, whereas mClass required a student to work directly with their teacher. In order to ensure our problem-solving team was drilling down to our students' lowest literacy skill, progress monitoring was consistent, and interventions offered to classroom teachers came from the same intervention platform.

Last, the sudden closure of schools in March of 2020 due to the COVID-19 pandemic not only disrupted the implementation of interventions but the collection of data as well. Students

and teachers were sent home, the doors of the schools were locked, and teachers were forced to work from home for a period of two weeks. At the onset of the pandemic, Pitt County Schools provided work packets for students to complete from home. Two weeks later, teachers began to offer online supplemental instruction to those students who had devices and reliable internet service. Those students who did not have such resources continued to receive instructional paper packets. Creekside's goal was to offer learning opportunities to as many students as possible during this unique time, however many students did not participate, including those students who were scheduled to receive interventions. Student participation was down, teachers were struggling with providing virtual instruction, and students' social and emotional well-being was a concern. In summary, due to the COVID-19 pandemic and the abrupt closing of schools, the scholarly practitioner's timeline, data collection methods, and data collected were significantly altered.

Recommendations

In this mixed methods action research study, the scholarly practitioner's goal was to determine the effectiveness of research-based interventions on K-2 literacy within the Multi-Tiered System of Support framework as well as teachers' perceptions of the MTSS framework being implemented at Creekside Elementary. Based on the data collected in this study and the positive relationship between the implementation of research-based interventions and student success, moving forward it is vital that schools across all districts expand the MTSS framework and implement the three tiers of intervention in order to meet the needs of those students who are working below grade level. According to Rosen (2018), MTSS is intended to deliver intentional supports using research-based interventions focusing not only on academics but behavior and

social and emotional needs as well. The MTSS framework and tiered interventions, therefore, should also be used to meet the needs of those students who have behavioral concerns.

The scholarly practitioner also suggests the creation of two problem-solving teams whereby one team focuses on the needs of K-2 students while the other focuses on the needs of those students in grades 3-5. Although two separate problem-solving teams were not created and implemented in this study, it was noted by the scholarly practitioner that having two different teams, assigned to a particular age group or grade level range, would allow for those problem-solving teams to be more intentional with the interventions being offered due to the members of each team being content, age-specific experts.

Future studies should support districts and schools with the implementation of the MTSS framework and the execution of interventions to fidelity at the secondary level. The majority of the research studied by the scholarly practitioner was related to the implementation of the MTSS framework at the elementary level. As a former middle school principal, the scholarly practitioner has seen firsthand the misconceptions and struggles associated with implementing interventions whether in small groups or one-on-one. For example, during the scholarly practitioner's tenure as a middle school principal, the focus of the teachers was solely on the content they were teaching. It was noted that secondary teachers often lacked the knowledge and training which was needed to assist students who showed deficits on phonemic awareness and basic reading skills. The teachers realized that their students lacked basic reading skills and even understood the correlation between these deficits and student motivation but were unsure how to mitigate issues within the classroom. Therefore, it would be beneficial for secondary teachers to receive professional development and training regarding these reading difficulties as well as classroom strategies to assist struggling students.

School administrators at the secondary level would also need to focus on effective scheduling since many secondary schools' schedules differ greatly from K-5 schedules. In the elementary grades, the majority of the students spend their day with one staff member whereas in the secondary grades, the majority of students spend their day with several different staff members due to teachers being licensed in the content for which they are experts. Secondary schools would have to be strategic in developing master schedules in order to allow teachers time to co-plan and share data on the students receiving the interventions.

Conclusions

From the Individuals with Disabilities Education Act (IDEA) which was established in 1975 to the Every Student Succeeds Act (ESSA) of 2015, students across the United States are entitled to a high quality education with a heavy focus on academic standards that will prepare them to succeed in college and careers. Schools must be mindful of the instruction they provide and must work together with their district to develop plans designed to close achievement gaps, increase equity, improve the quality of instruction, and increase outcomes for all students. Schools continue to look for ways to close the student achievement gap in order to raise student proficiency scores and graduation rates. Although schools will push forward with hours upon hours of quality instruction, resources, and adoption of state and local programs, a large achievement gap still exists in the American education system. As a result, many districts, including the district at the heart of this study, have implemented the MTSS framework to help close the achievement gap for students in grades K-12.

The purpose of this mixed methods action research study was to determine the effectiveness of research-based interventions within the Multi-Tiered System of Support framework. This study also examined teachers' perceptions of research-based interventions and

the MTSS framework's effectiveness in closing the achievement gap in literacy for grades K-2. Over a one-year period, participants engaged in surveys, participated in problem-solving team meetings, implemented research-based interventions, and participated in focus group interviews. Student assessment data was used via mClass and Istation which provided information about student performance. The assessment data collected provided K-2 teachers an in-depth understanding into their students' strengths and weaknesses as they implemented the MTSS framework and research-based interventions within the three-tier system of instruction.

The findings of this study have identified specific routines and expectations which must be in place in order to meet the needs of those students who are working below grade level. Critical components must be in place, such as quality tier I instruction, a sound understanding of the MTSS framework, school wide schedules, collaboration and communication, and data collection processes in order to promote student growth. The findings of this study are noteworthy, not only for the staff in the school where this study was conducted, but also in schools and districts across the nation looking to meet the needs of their diverse learners. Meeting the needs of these students with additional resources and structures in place could ultimately help close the achievement gap, raise student proficiency scores, and increase graduation rates.

Moving forward, the administration at Creekside Elementary will continue to develop schoolwide schedules that dedicate time to allow teachers to implement research-based interventions to those students who are working below grade level. Creating these schoolwide schedules and carving out dedicated intervention time will help ensure implementation fidelity and assist with data collection. Furthermore, teachers at Creekside Elementary will continue to have a voice and will be asked to provide feedback regarding the MTSS framework. The

teachers' opinions and statements throughout this study not only benefited the overall framework but played a vital role in student success.

Although the data in this study only pertained to K-2 literacy, the MTSS framework will continue to expand and include all grade levels, Kindergarten through fifth grade, at Creekside Elementary. Additionally, the problem-solving team will begin to meet on those students who are struggling in mathematics. Professional development will also have to be at the forefront to assist beginning teachers to become familiar with the MTSS framework. Professional development will cater to those veteran teachers who may need a refresher in implementation protocols or assistance in data collection.

Lastly, over the duration of this study, two different assessment and progress monitoring tools were used to collect data and to provide research-based interventions. As noted throughout the study, implementation fidelity is key to student success. Referring back to Durlack and DuPre (2008), when programs are implemented to fidelity, the success rate of those programs are profound over those programs that lack that same fidelity and structure. Programs that are implemented with fidelity produce sizable outcomes that are two to three times higher. Therefore, schools should remain faithful to effective programs that teachers are familiar with and offer student assessments and progress monitoring capabilities in both reading and math.

Scholarly Practitioner's Reflections

Since enrolling in East Carolina University in 2002, I have been planning my career as a lifelong educator. As a classroom teacher, I immersed myself in my teaching, focused on pedagogy, and allowed myself time to reflect on my future plans. I reflected on my strengths and weaknesses in and out of the classroom. This approach allowed me to think about my future in education and was very beneficial as I contemplated my career plans. My experience and success

in the classroom allowed me the opportunity to participate in the North Carolina's Principal Fellows Program. As a North Carolina Principal Fellow, I worked hard to understand the ever-changing policies and procedures associated with public education. I learned a successful leader helps mold their teachers not only into instructional experts, but also into caring, heartfelt individuals. Educating our youth is a challenging task due to the fact that education does not have a single purpose. Successful educators understand the importance of a sound education and realize what is taught in the classroom is more than just reading, writing, and arithmetic. In an ever-changing society, we must prepare our students for citizenship, help them become critical thinkers, and prepare them for a competitive global marketplace.

As a fifteen year veteran in the field of education, I have had the opportunity to serve at the elementary level, middle school level, and high school level. While I have noticed many differences between the elementary and secondary levels, I have noticed one similarity which constantly reminds me of the importance of a sound education and the reason why this problem of practice was chosen; student achievement gaps.

While reflecting on this 3-year journey, I came to the realization that anything is possible with proper planning and a support system in place. At times, it was difficult to find motivation. There were many days and nights where I stared at a blank computer screen. Some days it was easier to put the tip of the pen on a sheet of paper and begin writing down thoughts. Some days it was helpful to look back at the literature and research in Chapter 2 to assist in the next planning and writing phase.

Throughout this journey, there were obstacles which made me question the fidelity of the study. For example, the State of North Carolina's sudden switch from mClass to Istation. This abrupt change took place as I was finalizing Chapter 2 and planning my action research cycles.

The change in platforms forced changes to the data collection process and action research cycles. The change also required additional research to take place on my behalf pertaining to Istation. The COVID-19 pandemic was another obstacle which forced the closure of schools in the middle of my data collection. Due to the closing of schools, teachers at Creekside Elementary had to abruptly stop implementing interventions, therefore, the data collection process prematurely ended. This again led to changes in the data collection procedures as well as changes in the action research cycles.

As I began to write based on the research, I quickly realized that my writing became somewhat redundant. The redundancy led to me question my writing; however, I quickly realized the repetitiveness was part of the writing process. I truly enjoyed reading over the responses from the teacher surveys and the focus group interviews. This data was a tremendous help when creating a plan of action and allowed me to feel as if I was contributing to this study.

As I come to the finish line of this incredible journey, I realize it is important to pace yourself during a marathon rather than trying to sprint for an extended period of time. I can now look back at my problem of practice and say that we made a positive impact on our students' education at Creekside Elementary. I realize that this experience has helped me become a better writer, a better leader, and a better person. With that said, I often remind myself a lifelong learner seeks knowledge in and out of classrooms. I am passionate about education, have a strong desire to help others, and believe in providing every student the best education possible.

From the stidy, I have learned importance of being strategical and intentional, the significance of communication and teamwork, and that the decisions we make within our own buildings must be data driven. As a team, we were strategic and intentional with the creation of our implementation plan which included a school wide schedule, indivudualzied intervention

plans, and schoolwide forms which assisted the teachers and problem-solving teams with data collection. Communication and teamwork were essential when our team discussed the benefits of looking at Tier 2 student cohorts rather than individual students in the Tier 2. Looking at student cohorts and grouping our students based in their defecits allowed us to address more students in a shorter period of time. Finally, we can not under estimate the power of quantitative and qualititative data. Data was used throughout this study to make decisisons based on what was best for our students. These data-driven decisions led to student growth and next steps for the upcoming school years.

As we move forward at Creekside Elementary and prepare for the 2021-2022 school year, we must be mindful that many of our students will have even larger acamdeic gaps due to the COVID-19 pandemic. Following the protocls that were put in place throughout this study is something we will continue to do not only next year but in the years to come in order to meet the needs of all our students.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
rede.ecu.edu/umcirb/

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Paul Briney
CC: Travis Lewis
Date: 11/14/2019
Re: UMCIRB 19-002586
Research-Based Interventions Effects on K-2 Literacy

I am pleased to inform you that your research submission has been certified as exempt on 11/14/2019. This study is eligible for Exempt Certification under category # 2B.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
Paul Briney Dissertation Chapters 1-3(0.01)	Study Protocol or Grant Application
Paul Briney Proposal Defense PP(0.01)	Study Protocol or Grant Application
Survey/Focus Group Consent Letter(0.03)	Consent Forms
Survey/Focus Groups(0.01)	Interview/Focus Group Scripts/Questions
Survey/Focus Groups(0.01)	Surveys and Questionnaires

For research studies where a waiver of HIPAA Authorization has been approved, each of the waiver criteria in 45 CFR 164.512(i)(2)(ii) has been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: PCS RESEARCH APPROVAL

PROCEDURE 5230-P

EDUCATIONAL STUDY AND RESEARCH

Please describe the proposed study involving school students or school personnel for which assistance and participation is requested. Please be as specific as possible regarding the numbers of students, parents and professional staff who may be involved in this project. A preliminary planning conference may be helpful depending on the magnitude of the project.

1. Principal Investigator(s): Paul J. Briney

2. Title of Research Study or Special Project: THE EFFECT OF RESEARCH-BASED INTERVENTIONS WITHIN THE MTSS FRAMEWORK ON K-2 LITERACY

3. Purpose:

The purpose of this study will be to analyze research-based strategies within the Multi-Tiered System of Support, or MTSS, framework to determine their effect on K-2 literacy. WHY... Research shows, children who are exposed to reading an early age and develop early literacy skills are more likely to become fluent readers compared to those students who are not exposed to reading (Shrier, 2013). The purpose of this mixed methods action research study is to determine the effectiveness of research-based interventions within the Multi-Tiered System of Support Framework. This study will examine teacher's perceptions of researched-based interventions and the MTSS Framework's effectiveness in closing the achievement gap in literacy for grades K-2.

4. General Methodology:

Analyzing the Multi-Tiered System of Support and data collection is needed to better understand the strengths and weaknesses of the framework and will provide a richer perspective of the importance of implementation fidelity. There are two central research questions the scholarly practitioner will attempt to answer in this study.

1. What are the effects of implementing research-based interventions to fidelity within the MTSS Framework on student literacy in grades K-2?
2. How do teacher's perceptions of the MTSS framework change throughout the implementation of researched-based interventions on student literacy in grades K-2?

The first research question will provide quantitative data collected from fourteen classrooms within Creekside Elementary. The data collected and analyzed will be from the Amplify mClass platform as well as Istation. The mClass program as well as Istation will measure the development and progress of reading skills of Creekside students in those fourteen classrooms. The second research question will provide qualitative data in regards to how teachers view the implementation of researched-based interventions within the MTSS framework and its direct impact on student achievement in literacy.

5. School Involvement:

   a. Number of Students Needed: Approx. 100 (K-2) Students

   b. Selection Process of Students:

All participants in this study are students at Creekside Elementary who are enrolled in kindergarten, 1st grade, or 2nd grade. The scholarly practitioner in this study will focus on approximately 100 students in grades K-2 who are working below grade level according to data, classroom observations, and teacher input. Throughout the study, the practitioner will focus on the effect of the research-based interventions being implemented and its direct impact on student literacy in grades K-2.

   c. Time Required of Students: 30-45 mins a week

6. Administrative Involvement (Principal, Central Office):

   a. Specific Groups: Principal (Briney)... Counselor running Tier2/3 meetings with support from IC

   b. Tasks: Data Collection, Facilitate Tier2/3 Meetings, Providing Researched-Based Interventions

   c. Time Required of Administrators: Part of everyday work duties

7. Teacher Involvement:

   a. Specific Groups: 15 (K-2) teachers.... Counselor running Tier2/3 meetings with support from IC

   b. Tasks: Data Collection, Attend Tier2/3 Meetings, Implement Researched-Based Interventions

c. Time Required of Teachers: Part of everyday work duties

8. Student Involvement:

a. Number of Students Needed: _____

b. Selection Process of Students: Same as 5b

c. Time Required of Students: 30-45 mins a week

9. Equipment, Facilities, or Auxiliary Services Required:

N/A.....

10. Home or Parental Involvement:

a. Permission Form: N/A

b. Other: N/A

c. Time Required of Parents: N/A

11. Evaluative Instruments To Be Used: (Please attach a copy)

Student data will be collected using Istation. Teacher feedback data will be collected using the web based program Qualtrics. .

12. Written Communication: (Please indicate purpose of communication below and attach sample letters and memos.)

a. Parents: N/A.... Student names will not be used and the data collected is every day student data

b. Teachers: Teachers will be given a invitation to participate letter which they are to sign if the give their consent to participate.

c. Principals: N/A

d. Other School Personnel: N/A

13. Timelines of Activities: (Please include all activities involved in this project. Be as specific as possible and indicate who initiates which activities).

Attached

14. Research Assistant(s):

N/A

15. Pitt County Schools Intern Supervisor:

Dr. Council and Dr. Lenker signed off on the ECU Letter of Agreement in the Summer 0f 2018. (Lenker June 2018) (Council July 2018)

16. Special Conditions or Restrictions:

N/A

17. Plan for Publication or Use of Results:

All results from Action Research Cycle 3 will be shared with K-2 stakeholders in August 2020 as well as Pitt County School's District Support Staff and PCS Principals. The goal of sharing the data collected is provide district and school leaders with advantageous information pertaining to teacher perspectives and recommendations regarding the implementation process of researched-based interventions.

18. In What Ways Might the Proposed Research Be Considered Relevant to General Educational Objectives? To Pitt County Schools in Particular?

Creekside Elementary, designated a low-performing school by the state of North Carolina since 2016 based of End-of-Grade Exam data, continues to grow students academically but fails to raise student proficiency percentages. In order to grow students academically, as well as raise proficiency numbers, the staff at Creekside Elementary will adopt the MTSS framework and implement researched-based strategies to fidelity in order to help students in K-2 make gains in literacy. The researcher in this study will collect student literacy data at the beginning of the year, middle of the year, and end of the year using the Istation platform to better understand student's strengths, weaknesses, gains, and shortfalls. The researcher in this study will also collect data from the MTSS framework as students either move through or exit the Tier process.

All results from Action Research Cycle 3 will be shared with K-2 stakeholders in August 2020 as well as Pitt County School's District Support Staff and PCS Principals. The goal of sharing the data collected is provide district and school leaders with advantageous information pertaining to teacher perspectives and recommendations regarding the implementation process of researched-based interventions.

REQUEST TO CONDUCT RESEARCH STUDY OR SPECIAL PROJECT

I agree to furnish Pitt County Schools a copy of the results or this research study or special project.

Signature of Person Making Request

11/25/19
Date

431 Forlines Rd
Address

Winterville NC 28590
Address

252-353-5253
Telephone Number

BRINEYP@PITT.K12.NC.US
E-Mail Address

Travis Lewis
Signature of Supervising Professor

11/25/19
Date

East Carolina University
University/College Organization

(252) 328-5485
Telephone Number

lewistr16@ecu.edu
E-Mail Address

(For Office Use Only) Project Approval

Project Approved: ✓

Project Disapproved: _____

Referred to: _____

Signature of Superintendent/Designee

12/4/19
Date

APPENDIX C: PARTICIPANT INFORMED CONSENT FORM

You are being invited to participate in a research study titled "THE EFFECTS OF IMPLEMENTING RESEARCH-BASED INTERVENTIONS TO FIDELITY WITHIN THE MTSS FRAMEWORK ON K-2 LITERACY" conducted by Paul J. Briney, a student, at East Carolina University in the College of Education department. You are being invited to participate in this study because you are a K-2 teacher at Creekside Elementary which is the school where the research is being implemented. The goal is to survey and interview all fifteen K-2 teachers in/at Creekside Elementary. The survey will take approximately 10 minutes to complete. A couple weeks later, participants will be asked to participate in a focus group interview which will take approximately 60-90 minutes to complete. Focus group questions will be based off the data collected in the teacher survey. The purpose of the focus groups is to gain a better understanding of the participant's knowledge, misconceptions, and approaches regarding the implementation of researched-based interventions within the MTSS Framework. The questions developed will assist the researcher in planning the next steps needed in order to see the possible correlations between MTSS and gains in student literacy. The hope is that the information collected will assist the administration and teachers at Creekside Elementary better understand the MTSS Framework, research-based interventions, and how the teachers at Creekside Elementary can effectively implement those research-based interventions. Such an analysis of the MTSS strategies is needed to help determine the benefits of the framework at hand. The results of this study will allow Creekside Elementary staff to distill the three-tier process and provide the school's stakeholders an

understanding regarding the fidelity and importance of the framework. The goal of the research is to determine the effectiveness of researched-based strategies within the Multi-Tiered System of Support Framework while examining teacher's perceptions of MTSS and its effectiveness relating to student achievement and academic growth. Survey questions and interviews will be provided to participants before being formally administered which again allows participants the opportunity to decide whether to participate or not. You will be audio recorded during the focus group sessions and the researcher will directly quote your responses. Your responses will be kept confidential and anonymous and all data will be stored in a password protected database. No data will be released or used with your identification attached. Your participation in the research is **voluntary**. You may choose not to answer any or all questions, and you may stop at any time. There is **no penalty for not taking part** in this research study. Please call Paul Briney at 252-258-5251 for any research related questions or the University & Medical Center Institutional Review Board (UMCIRB) at 252-744-2914 for questions about your rights as a research participant.

Documentation of Informed Consent

You are voluntarily making a decision whether or not to participate in this research study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

_____ _____

Signature of Subject Date

To participate in the survey please click on the link below.
https://ecu.az1.qualtrics.com/jfe/form/SV_3eEBti7OZemCNmt

APPENDIX D: MTSS TEACHER SURVEY QUESTIONS

I know the SIX domains of the MTSS Framework

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I have been adequately trained on the SIX components of MTSS

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I believe that my school is implementing the six components of MTSS effectively

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

Leadership takes the time to review MTSS updates at least once a month

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I understand the three tiers in the Problem-Solving Framework

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

Our school has a well-established Problem-Solving Team that is composed of experienced teachers in various grade-levels

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

Our school has an effective data collection process in place that allows me to effectively analyze my data in a timely manner

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I feel well prepared to analyze my student's data

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I feel well prepared to lead data-based decision making regarding my students academics

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

As a teacher, I am able to effectively implement research based-strategies for our struggling students

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I feel well prepared to progress monitor my students

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

I believe the MTSS framework is important to improving student outcomes

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

In 2018-2019, following the MTSS framework was beneficial in improving student literacy scores in grades K-2

- O Strongly Agree
- O Agree
- O Somewhat agree
- O Somewhat disagree
- O Disagree
- O Strongly disagree

APPENDIX E: FOCUS GROUP PROTOCOL

Date & Time of Focus Group: December 9, 2019 at 3:00 PM

Location of Focus Group: Creekside's Instructional Coach's Room

Facilitator: Paul Briney

You are being invited to participate in a research study titled "THE EFFECTS OF IMPLEMENTING RESEARCH-BASED INTERVENTIONS WITHIN THE MTSS FRAMEWORK ON K-2 LITERACY". You are being invited to participate in this study because you are a K-2 teacher here at Creekside Elementary where I am implementing the research. Today's focus will take approximately 60-90 minutes to complete. Focus group questions will be based off the data collected in the teacher survey. The purpose of the focus groups is to gain a better understanding of the participant's knowledge, misconceptions, and approaches regarding the implementation of research-based interventions within the MTSS Framework. The questions developed will assist me, the researcher, in planning the next steps needed to see the possible correlations between MTSS and gains in student literacy. The hope is that the information collected will assist the administration and teachers at Creekside Elementary better understand the MTSS Framework, research-based interventions, and how teachers at Creekside Elementary can effectively implement those research-based interventions. The results of this study will allow Creekside Elementary staff to distill the three-tier process and provide the school's stakeholders an understanding regarding the fidelity and importance of the framework. The goal of the research is to determine the effectiveness of research-based strategies within the Multi-Tiered System of Support Framework while examining teacher's perceptions of MTSS and its effectiveness relating to student achievement and academic growth.

Survey questions and interviews will be provided to participants before being formally administered which again allows participants the opportunity to decide whether to participate or not. You will be audio recorded during the focus group sessions and the researcher will directly quote your responses. Your responses will be kept confidential and anonymous and all data will be stored in a password protected database. No data will be released or used with your identification attached. Your participation in the research is **voluntary**. You may choose not to answer any or all questions, and you may stop at any time. There is **no penalty for not taking part** in this research study.

Documentation of Informed Consent

You are voluntarily making a decision whether or not to participate in this research study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

_____ _____

Signature of Subject Date

Questions to be Asked, Listed Fully and in Order

1. What type of Professional Development is needed to help us better implement research-based strategies?
2. How can we as a school create an effective Problem-Solving Team?
3. How can we as school effectively collect and analyze data to help the school identify and target instructional needs?
4. What does implementing research-based interventions look like to you?
5. As a school, how should we determine when we implement research-based strategies to our struggling students?

6. As a school, how can we effectively progress monitor low-performing students to ensure student growth?

APPENDIX F: POST-IMPLEMENTATION TEACHER SURVEY QUESTIONS

Question 1 What additional Professional Development is needed to help us better implement research-based strategies?
Question 2 What were some strengths and weaknesses of Creekside Elementary' s Problem-Solving Team been during the 2019-2020 school year?
Question 3 What were some strengths and weaknesses regarding Creekside Elementary' s data collection How has that plan benefited the students at Creekside?
Question 4 What additional research-based resources should Creekside Elementary consider using?
Question 5 What changes should be made to the implementation plan regarding research-based strategies?
Question 6 What were some strengths and weaknesses regarding Creekside Elementary' s progress monitoring plan?